Regional Science, Location and Economic Theory: Thoughts and Discussions about Development

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ABSTRACT

This theoretical discussion intends to reinforce some of the main aspects of Regional Science, discussing the spatial issue through studies on geographic location, and how these relate to important economic theories. From the rescue of the thinking of classic authors of Regional Science, emphasizing spatial and location issues, and of Economics with a focus on development, using the resource of bibliometric research of periods of contemporary history, it was possible to review thoughts and theories and emphasize the importance of connecting factors present in economic and geographical studies. The region and the territory were approached in an attempt to demonstrate them as an environment for important research phenomena. It was noted that phenomena linked to Regional Economic Development have re-emerged in recent years as a global trend, considering internal movements due to the health crisis (COVID-19) and global conflicts (i.e. Russia x Ukraine), but they are still poorly studied. The scientific contribution lies in strengthening the relationship between what is discussed in academia and what happens in society.

Keywords: Development, Economic Space, Economic Theory, Location, Regional Science.

I. INTRODUCTION

The laboratory of economics is human society, whose behavior is changeable over time and subject to spatial constraints. Economic agents are considered centers of decision and regional or territorial transformation. Studies point to factors such as job generation, education, and income, as well as investment in equipment that concentrates processes, technologies, and people.

When the economic facts selected for analysis are treated according to conventional methodologies for the construction of scientific knowledge, regularities and dependence relationships are observed that suggest it is possible to classify causes and effects, which are measurable in most studies.

It is understood that, if kept constant, a diversity of considerations, factors, and processes in more or less constant flux, such as product or process technologies, market demand, number and strength of competitors, sources of supply of goods and services, among others, it becomes possible to determine the best location for a production unit or service center or to predict something that may occur as part of a transformation or regional development system, capable of affecting all other parts of the economy.

The literature demonstrates that since the emergence of civilization, human activities and quality of life have been unevenly distributed across continents and within their territories (Braudel, 1979). In this sense, studies on the Regional Economy, based on Economic Theory, are centered on the concern about the economic space. In the historical literature, many thinkers have dedicated efforts to the development and discussion of the Theory of Location, a fundamental aspect of Regional Science. However, this work would not be able to revisit so many broad and complementary approaches, while the studies used themselves contributed to explaining the bases of agricultural and industrial location and post-trade and services.

These authors argue that the process of economic development does not occur equally and simultaneously in all regions. On the contrary, it is a very irregular process and, once started in certain places, it has the characteristic of strengthening more diligent areas that have greater growth potential. According to Myrdal (1957), “in the 1950s, development theorists developed a principle that allowed them to discover the bases of uneven development –a principle, however, ignored for many decades – that of cumulative or circular causality”.

In the period after World War II, the problem and regional phenomena were widely discussed by several researchers, whose ideas strongly influenced economic planning in peripheral countries, especially in Latin America. During this period, Regional Science developed greatly. In this sense, the objective of this text is to present some insights, establishing a connection with Applied Economic Theory, focusing the discussion.
on aspects that involve development. Therefore, the objective of this text is to provide theoretical components to broaden or reinforce the discussion on the relationship between Regional Science, Location and Economic Theory, emphasizing elements of development that act in the economic space in which important agents are inserted. The scientific contribution lies in strengthening the connections between what is discussed in the academy and what is practiced in the market.

In this step, the regional economic dynamics becomes a very complex object of scientific investigation, given the existing interrelationships within and between different locations, highlighting its importance for the cohesion of the national economy and the economic agents that act (or not) in its development.

II. Methodology

This work was prepared from a bibliometric survey of articles and books in the areas of Economics and Regional Economic Development, observing the understandings of classic and contemporary authors, highlighting areas such as Economics, Geography, Sociology and Philosophy, all researchers of Regional Science here with focus on studies and Location Theory.

As in the Social Sciences, economic and regional phenomena are constituted, founded and transformed from multiple determinations that are essential to them. Such determinations are constitutive of the phenomenon, are part of it, are determined, or compose other relationships. Knowledge is not produced, therefore, from a simple reflection of the phenomenon, but has to reveal, in the phenomenon, what is constitutive to it and which is, in principle, obscure; the method for the production of this knowledge assumes, therefore, that the phenomenon as it really is behind the appearance is discovered, and more, what even determines that it appears in the way it does (Andery et al., 2014).

III. Regional Science

Regional Science is an area of knowledge belonging to the Social Sciences, which has analytical approaches to specific spatial, urban, rural, or regional problems. Some peculiar topics of regional studies are not limited to Spatial Economics or Location Theory – locational modeling; the transport; migration analysis; land use and urban planning; inter-industry, environmental and ecological analysis; resource management; urban and regional policy analysis; the geographic information system; as well as the analysis of spatial data. In the broadest sense, any analysis of Social Sciences that has a spatial dimension is studied by regional scientists, mainly economists, and geographical ones. Thus, it is worth briefly understanding the genesis and history of this field.

Location models were started in 1826 by Johann Heinrich von Thünen with his study of agricultural production. In the 20th century, other scholars – such as Alfred Weber (1909; 1969), Walter Christaller (1966), August Lösch (1940; 1967), and Walter Isard (1956) – printed their significant contributions to the increment of these paradigms.

Common to the proposals and analyzes carried out by these theorists is the fundamental importance of transport costs to determine the location of the enterprise, usually producing a single product, counterbalanced by labor costs or the effects of agglomeration.

It should be noted that the various types of agglomeration are distinguished by the spatial scale or the spatial reference unit chosen in conducting the research, in the same way, that there are different types of aggregation of economic agents.

Spinola (2003), even warning about the risk of imprecision, highlights that the theoretical debate on the location issue can be divided into two distinct periods. The first, which ends at the end of the 60s of the 20th century, comprises two theoretical currents: one that considered markets as point-like, that is, consumers would be concentrated in discrete points of the geographic space, and another that considered consumers dispersed in market areas of different sizes.

According to Waibel (1955), Thünen's work is divided into three volumes. The first was subtitled Analysis of the influence exerted on agriculture by the price of cereals, the fertility of the soil, and taxes, being published in 1826. The second volume deals with “[…] adequate wages and their relation to the interest and with the income […]” (Waibel, 1955), originated in 1850 (first part) and in 1863 (second part). In recent years, the third volume, entitled “Bases for the Determination of Soil Yield: The Most Favorable Season of Circulation and the Value of Wood Reserves of Different Ages in Reforestation with Pine Trees” has become public.

It is known that Von Thünen (1966), in order to explain the locational pattern of German agriculture, sought to demonstrate that this resulted from the combination of the physical productivity of the land with the distance to markets and transport costs, which determined the rings of agricultural specialization around the cities.

The economic literature demonstrates a separation between rural and urban, as well as economic
activities and work relationships are well differentiated in these spaces. Regarding urban expansion and changes in rural areas, Mesquita (1978) reinforces that urban expansion and its anticipation result in less intensive use of land by farmers close to cities. Sinclair (1967) defends the idea that, around urban areas in more industrialized regions, land use patterns are being developed by forces different from those identified by Von Thünen.

It should be noted that, in von Thünen's theoretical model, rural space and agricultural activities define land occupation and space organization. However, with industrialization and urban expansion, there is an appreciation of urban areas and competition for land use with agricultural activities. In a city where boundaries are not fixed, competition for land between various agrarian uses in its surroundings is complicated by growing competition with non-agrarian uses. Urban land, and even land where urbanization is expected, is more valuable than rural land, and the land use that provides the highest economic rent is urban use which shifts rural land uses to marginal areas. (Mesquita, 1978).

In Waibel's view (1955), this theoretical model can be characterized as follows Von Thünen's Isolated State is a classic example of a method that determines land use as influenced by economic forces acting as if in a vacuum. Thünen employed an abstract and deductive method and thus enriched the literature on economics with one of his most expressive works.

It can still be clearly observed that von Thünen takes up David Ricardo's theory of land rent, which varies according to the distance from the market and the fertility of the soils (Theory of Crops). In this way, he ends up developing, in association with the Theory of Intensity, the premise that agricultural systems decrease in intensity with increasing distance.

The idea of establishing, in conceptual terms, an analogy between the formation of the rural landscape and the use of interurban space proved to be extremely productive. In this sense, what was, in the original production of that theorist, the set of agricultural producers dispersed in space and forced to sell their products in a single market, if analogously transported to the city, are replaced by the set of workers and their families obliged to commuting daily to their jobs, which are supposed to be more concentrated in some specific parts of the city, generally considered to be the center of these.

If one considers what Fujita (1989) explains, it can be said that, in the basic model of the New Urban Economy, in addition to the concentration of jobs in the central part, it is assumed that the city is served by a radial transport system. Therefore, it is also assumed that the urban space is homogeneous, and its land is available for residential use.

There is a discussion about regional development policies, with a proposal to overcome divergences between exogenous and endogenous understandings. Arguments suggest that authors with an exogenous bias consider it larger than it actually presents and authors with an endogenous bias perceive it to be smaller and more restricted than it appears, applying more to territorial contexts outside the metropolitan areas. Swyngedouw (1997) resorted to the concept of glocalization, in order to account, at the same time, of epistemological and fundamental aspects linked to the morphology and dynamics of capitalism in its post-Fordist stage, certainly changing dialectical propositions in an information society.

IV. LOCATION AND ECONOMIC THEORY

At this point, we move on to another landmark of Regional Science, which deals with the genesis of the modern Theory of Industrial Location, which is generally dated to 1909, the year in which the German economist Alfred Weber published his book entitled On the Location of Industries. However, it should be noted that Weber was certainly not the first to pay attention to industrial location, for by the end of the 19th century some other German scholars had already written on this subject. The most important of these, who preceded Weber, was probably Wilhelm Launhardt (1872; 1882; 1885), who tried to show how optimal location can be determined when you have two sources of raw materials and a market, a situation represented by the sides of a triangle.

This researcher also developed another approach based on the concept of market areas, showing how these could be delimited in a simple situation. The influence of Launhardt and his contemporaries did not extend far beyond Germany, due to the very difficult of the language, but the translation of that book by Weber into English, in 1929, assured him a much larger audience and, in addition, his theory was much broader and more rigorous in exposition than had been undertaken by his predecessors.

Alfred Weber (1929) sought to elucidate the causes of industrial location, emphasizing the role of transport costs of raw materials and finished products as a function of the location of consumer markets and the location close to the workforce of companies. Transport costs are seen as a primary determinant of industrial location. However, these costs are not considered directly, but as a function of the weight to be transported and the distance to be covered.

Reflecting on the costs inherent to labor, according to general regional factors, Weber defends a place where workers are relatively cheaper, as something that can divert the factory from the location with the
lowest transport cost. This will happen if the reduction in costs for these workers exceeds the additional transportation costs incurred.

As Weber (1929) expands his study to consider the orientation of the entire industry, he states that the greater the importance of the working class as a factor of production and economy of a particular factory, the greater the probability of locational occurrence of a point of less expensive labor.

Since its publication exactly ninety years ago, Alfred Weber's theory (1929) has suffered a considerable amount of criticism, however, despite these, the analysis of that theorist has much value, even today. As Weber asserted in his writings, his objective was to start and not finish the modern Theory of Industrial Location, which already values his analysis greatly.

Most scholars, after his work, took advantage of his reasoning, as well as the various definitions and research instruments, which were improved, his concept of isodapanes. It can still be assured that, despite Weber's concern with transport costs, the Weberian model can be easily modified to become the foundation of a General Theory of Variable Cost, as was done later.

In summary, Weber's theory, in principle, refers to the optimization of transport costs, that is, an industry must install itself to the extent that the relationship of costs with raw materials, labor, and consumer market is reduced, and is compatible with these three variables. As stated by Benko (1999), Weber "seeks theoretical answers to the problem of the optimal location of companies [...] from the point of view of production costs, the locations are not equivalent, there being a precise location where production will take place at minimum cost". Because it is an optimal location, the economic development perspective of this theory aims at a local or regional scale.

It is also worth noting that the direct value of Weber's theory, as a framework for empirical analysis, cannot be overlooked either. Isard (1956) claimed that it was only by using the Weberian approach that he could successfully analyze the location of the iron and steel industry in the United States.

Attention will be paid to a geographer, Walter Christaller, who was the author of the most widespread geographical theory on urbanization: the Theory of Central Places, developed in his doctoral thesis in central places in southern Germany, defended in 1932.

According to the geographer Claval (1974), Christaller's great merit, in addition to the value of his theory itself, was to have demonstrated that geography could be studied in an abstract and deductive perspective, like the political economy. This was at a time when the practitioners of economic geography devoted excessive attention to the study of natural resources, focusing mainly on the description and reduction of geography, dealing only with the detailed analysis of the potential of nature and the methods that man used. Finally, it can be asserted that the development and decline of cities, according to Christaller (1966), would depend on economic factors, which would include the geography of localities in the role of economic geography.

Therefore, the existence of economic laws would also imply the existence of laws of urban geography, which would, however, be of a different type from natural laws, perhaps having to be designated not as laws, but as regularities (obligations), since they would not be as inexorable as natural laws.

That said, we move on to another name in Regional Science, August Lösch. It is observed that the theory of Lösch (1940; 1967) is similarly radically different from what was advocated by Weber, insofar as it focuses its attention on the definition of market areas and on the cause of the choice of market. The location that is in the maximization of profit, and it is very close to Christaller’s recommendation.

It is known that Lösch (1940; 1967) expanded his study to consider the orientation of the entire industry, he states that the greater the importance of the working class as a factor of production and economy of a particular factory, the greater the probability of locational occurrence of a point of less expensive labor.

Following the most significant Regional Science theorists for the purposes of this work, attention is paid to Walter Isard, who was the creator of Regional Science and represents a Weberian synthesis, developing the general equations of Lösch. His theory is integrative, not analyzing each locational factor in isolation (Costa, 2002). Isard, according to Spinola (2003), undertakes significant work by introducing the problems of space in economic theory through the concept of distance inputs (the movement of a unit weight over a unit of distance). The price of a distance input is calculated by the transport fee and, as in the case of capital inputs, a reduction in price causes a scale and substitution effect.

Spinola (2003) warns that, when considering that different regional production structures occur, the transport factor may be included in the various cost functions as an input, with the consequent advantage

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of its explicit consideration. Thus, by virtue of its very nature, it will condition the locational orientation within the framework of the conventional theory of production.

Having seen the main theories of Regional Science, it is now worth considering what Benko (1999) pondered about its genesis, which is in solving problems raised in the region, or by the territorial division of activities, which coincides with the will to balance the said Regional Development, but first it is necessary to understand what constitutes this and that will be what the next topic will do. 

Castro (2020) argues that economic agents contribute directly to the economy and regional development through the generation of jobs and new business opportunities and the consequent increase in income, infrastructure and installed appliances, payment of taxes, and other initiatives of social responsibility. Likewise, the planning and implementation of its operations and the social, economic, political, and cultural consequences involved become important objects of scientific studies.

V. CONCLUSION

The results of this article present some of the main aspects of Regional Science, discussing the spatial issue through studies on geographic location, and how these are connected with important economic theories. In the Regional Science dimension, mainly from the literature reviewed for this article, the concept of the territory allows understanding and describing ways of life, how people and groups organize and relate to each other, collaborating to identify ways of using and appropriating spaces and environments. It is possible to relate and measure the production and consumption of goods and services via material and symbolic relationships and exchanges. Territorial configurations actively promote changes in regional dynamics and in production and consumption processes and, in broader terms, ways of life.

Referring to development policies, with the intention of overcoming the opposition between exogenous and endogenous understandings, Swyngedouw (1997) resorted to the concept of glocalization, in order to address, at the same time, fundamental aspects linked to morphology and dynamics, of functioning of capitalism in its post-Fordist stage.

Regional Science is constantly evolving, in the search for answers to economic and geographic phenomena. It was perceived that the economic geography of production assigns a clear role to the local, a result that is generally counterintuitive in the supposed era of the global information economy. According to this perspective, reinforced by research, the institutional context – and not just geographic proximity or technological availability – acts to define the conditions under which knowledge can actually be translated and transferred from one location to another, or that is, physical proximity is not the only source of density in corporate relationships, nor can this dynamic be guaranteed by the availability of information technologies, thought of as a substitute for location. Alignments point out that the foundation for the development of strong relationships and shared understanding is institutional affinity or similarity.

Some economic theorists criticize these classics of the location to the present day, however, the value and applicability of their positions and models are undeniable, the consonance of their studies, including understanding the spatial economic activity of a region, which by in turn generates its own population dynamics with several possibilities for spatial arrangement.

It was noted that phenomena linked to Regional Economic Development have re-emerged in recent years as a global trend, considering internal movements due to the health crisis (COVID-19) and global conflicts (i.e. Russia–Ukraine), but they are still poorly studied. The scientific contribution lies in strengthening the relationship between what is discussed in academia and what happens in society.

CONFLICT OF INTEREST

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