DOI: 10.46551/rc24482692202420

Revista Cerrados ISSN: 2448-2692

https://www.periodicos.unimontes.br/index.php/cerrados

Logistics and contemporary urbanization: scalar plots and relational pairs

Logística e urbanização contemporânea: tramas escalares e pares relacionais

Logística y urbanización contemporánea: tramas escalares y pares relacionales

Samarane Fonseca de Souza Barros
Federal University of Juiz de Fora (UFJF), Juiz de Fora, MG, Brazil
samaraneb@gmail.com

Abstract

The productive restructuring initiated in the 1970s, driven by globalization and neoliberalism, has transformed contemporary cities. These changes have resulted in new forms of production in the built environment and greater territorial fluidity, introducing new agents in the production of urban infrastructures. Circulation, which is fundamental for capitalist accumulation, requires specific infrastructures, reflecting the tensions of unequal capitalism. Urban infrastructures, once established in cities, affect the materiality and organization of urban forms, influencing land prices and the location of agents, while also integrating cities better into global networks. The production of these infrastructures, which are often exploitative and oriented by private interests, highlights logistics as a crucial mediator in urbanization processes. This text, based on bibliographic analysis, discusses the relationship between logistics and contemporary urbanization, focusing on scalar plots and emerging relational pairs, offering a theoretical and analytical examination of these processes.

Keywords: Infrastructure. Positionality. City Production. Scales. Logistics.

Resumo

A reestruturação produtiva iniciada na década de 1970, impulsionada pela globalização e pelo neoliberalismo, transformou as cidades contemporâneas. Essas mudanças resultaram em novas formas de produção do ambiente construído e maior fluidez territorial, introduzindo novos agentes na produção de infraestruturas urbanas. A circulação, fundamental para a acumulação capitalista, exige infraestruturas específicas, refletindo as tensões do capitalismo desigual. As infraestruturas urbanas, ao se fixarem nas cidades, afetam a materialidade e organização urbanas, influenciando preços da terra e localização dos agentes, além de integrar melhor as cidades em redes globais. A produção dessas infraestruturas, muitas vezes espoliativa e orientada por interesses

privados, destaca a logística como mediadora crucial nos processos de urbanização. Este texto, baseado em análise bibliográfica, discute a relação entre logística e urbanização contemporânea, focando nas tramas escalares e pares relacionais emergentes, oferecendo uma análise teórica e analítica desses processos.

Palavras-chave: Infraestruturas. Posicionalidade. Produção de Cidades. Escalas. Logística.

Resumen

La reestructuración productiva iniciada en la década de 1970, impulsada por la globalización y el neoliberalismo, transformó las ciudades contemporáneas. Estos cambios resultaron en nuevas formas de producción del ambiente construido y mayor fluidez territorial, introduciendo nuevos agentes en la producción de infraestructuras urbanas. La circulación, fundamental para la acumulación capitalista, exige infraestructuras específicas, reflejando las tensiones del capitalismo desigual. Las infraestructuras urbanas, al fijarse en las ciudades, afectan la materialidad y organización urbanas, influyendo en los precios de la tierra y la ubicación de los agentes, además de integrar mejor las ciudades en redes globales. La producción de estas infraestructuras, a menudo expoliativa y orientada por intereses privados, destaca la logística como mediadora crucial en los procesos de urbanización. Este texto, basado en análisis bibliográfico, discute la relación entre logística y urbanización contemporánea, enfocándose en las tramas escalares y pares relacionales emergentes, ofreciendo un análisis teórico y analítico de estos procesos.

Palabras-clave: Infraestructura. Posicionalidad. Producción de ciudades. Escalas. Logística.

Introduction

The changes in the technical paradigm associated with the productive restructuring process that started in the 1970s, as well as the rise of normative ideals that are typical of globalization and neoliberalism, have brought about changes in cities, in relation to both the production of the built environment and its inseparability from the contemporary urban scale. The new forms of capitalism, increasingly marked by the simultaneity of relations and exchanges, coupled with the need for greater territorial fluidity, have led to the emergence of different agents in cities for the production of infrastructures and other regulatory apparatuses.

Circulation, as one of the main stages of contemporary capitalist accumulation, requires specific forms so that it may occur without major setbacks. Such forms, treated here as infrastructures, are socially produced, being thus composed of elements of conjunctural and structural orders. Furthermore, when organized and shaped, built environments reflect tensions and contradictions that are typical of the uneven development of capitalism.

Infrastructures, in turn, when combined into networks, points and areas and, when fixed in cities, alter not only the materiality and organization of urban forms in their relations with land prices and the location of agents, but also enable a better insertion of cities in different networks and in the relational space-time of capitalism. The general trends and the urban scale related to the hegemonic vectors of logistics particularize in cities different rhythms and vectors expressed by multiscalar relations and plots.

The production of infrastructures in an increasingly exploitative manner, related to private interests, corroborates the capitalist production of cities and brings to the forefront the role of logistics as one of the mediators of the ongoing urbanization processes, as it highlights the hegemonic elements and forms of these processes. Moreover, logistics associates technical and normative vectors in the production of built environments aimed at the distribution of goods and the circulation of capital.

There is a redirection in the production of certain forms to optimize circulation and a search for overcoming distances, reverberating in changes in the positionality of cities in the networks in which they are inserted. We highlight cities in their relational aspects, as they are the preferred areas for the materialization of agents tied to the hegemonic scales of capitalism.

The purpose of this paper is to discuss the relationships between logistics and contemporary urbanization, highlighting their scalar plots. It is, therefore, a theoretical and analytical essay on the main points of this relationship, to which end our main methodological procedure consisted of a bibliographic survey and subsequent analysis of the literature. The texts were sectioned and analyzed according to three main themes: 1) contemporary urbanization; 2) logistics; and 3) positionality and geographic scales.

We divided this paper into three other parts, in addition to this introduction and the final remarks: the first addresses the forms and processes of the relationship between logistics and urbanization; the second discuses scalar mediations and infrastructural plots; finally, the third part proposes relational pairs that emerge from these relationships and serve as analytical lenses to allow a better understanding thereof.

Relationships between logistics and contemporary urbanization: forms and processes

Contemporary capitalism, marked by vectors of economic and political globalization, demands a strong technical and regulatory apparatus for its reproduction without major spatial bottlenecks. The distribution and circulation stages take center stage in a system that increasingly incorporates the imperative of acceleration and fluidity as structuring factors.

As regards urban phenomenon, hypotheses on planetary urbanization (Brenner, 2014; Brenner, Schimid, 2015), revisiting what Lefebvre proposed in the 1970s (Lefebvre, 1976), revolve around overcoming the dichotomy between the countryside and the city and between what is internal and external to the physical limitations of the city.

The moment of implosion-explosion recognized by Lefebvre (1976) as an inflection in the course of urbanization is now accompanied by vectors that extend beyond agglomeration, producing socio-spatial processes that no longer respond exclusively to industrial forces and which demand new political regulations and urban management (Brenner; Schimid, 2015).

The debates on planetary urbanization, therefore, demonstrate, first, the partial concretization of Lefebvre's propositions on urban society as the urban phenomenon and the urbanization process are no longer restricted to the scale of agglomeration, nor do they present the same characteristics of the city – concentration, density, and heterogeneity (Morcuende, 2021).

The virtuality of the urban phenomenon gains extension from the transformation the built environment and the production of infrastructure networks and logistics systems. These elements respond to the logic of capital circulation and are increasingly dense and complex, as they combine and intertwine in different places, territories, and scales (Brenner; Schimid, 2015).

According to Morcuende (2021, p. 12), *"planetary urbanization is the observation of the operationalization of the entire planet, which supports the current processes of accumulation and circulation of capital […]."*

Circulation involves the stage of distribution of goods and, in a certain way, organizes them territorially, which requires regulation. If distribution, thus, occurs materially, circulation occurs on more virtual scales – which does not mean that they are not spatial. Inserted in a context of globalization and functional and vertical integration of production processes, circulation is increasingly conceived based on hegemonic scales that trigger strategic tools for greater efficiency of accumulation.

The game of scales mediated by distinct agents gains prominence with urbanization processes that are also enveloped by their own specific scalar plots depending on time and space. These processes are marked by the operationalization of places to subsidize the socioeconomic dynamics of urban life (Brenner, Schimid, 2015). The operationalization of these places permeates both the need to produce infrastructures and general conditions for production and circulation, as well as the urgency of regulations that meet the neoliberal scope.

In this sense, logistics becomes central not only as an agent that is capable of organizing systems and technical networks at the territorial level, but also as a means of regulating both the general processes of capitalist accumulation and their spatial results – increasingly associated with the dictates of planetary urbanization.

According to Frago i Clols (2015, p. 4), logistics is "a trans-scalar concept that can be detected in any chain of activities that takes place in different places." Therefore, when we activate the trans-scalarity of logistics activities, we see that they develop a tangle of complex networks composed of – and that are components of – different socio-spatial orders.

We can understand logistics as a *mediating process* of contemporary urbanization insofar as it allows the explosion of the conditions of social reproduction and subsistence of the urban phenomenon, thereby producing, as spatial results, areas destined for logistics activities and their corresponding infrastructures that belong to the local scale, but which are conceived and undertaken by external and hegemonic agents. The notion of mediation is treated here as one of the possibilities of making visible and bringing to light the results of a process, while making it hegemonic from the production of urban space (Castriota, 2016).

Logistics, thus, as a key aspect of contemporary capitalism, in addition to being one of the many processes developed by the system, acts as a facilitator and mediator of

socio-spatial relations at different scales of the urban phenomenon. This is because, as an analytical lens, logistics allows us to understand urbanization beyond the quantitative criteria for delimiting agglomerations and brings to light the need to consider the management of different spaces and scales.

The urban issue in contemporary times should not be understood only as a local arena for global accumulation, but rather as *"[...] a strategic regulatory coordinate in which [...] a multiscalar restructuring of (national) State spatiality unfolds"* (Brenner, 2013, p. 206).

Especially with the advance of neoliberalism, we have witnessed the emergence of a governance that not only disseminates capitalist logic in all social relations, but which also consolidates corporate rationality as a fundamental principle and redefines national arrangements in terms of the market (Dardot; Laval, 2016). This resignification occurs mainly when considering the changes in the hinterlands that disintegrated from functional reconfigurations, associating new spaces with planetary urban networks (Castriota, 2016).

Brenner and Schimid (2015) warn that neoliberal regimes mark multiple institutional spheres. We assume that these marks are preceded by an organizational tendency that aims at the coherence of markets from the incorporation of new hinterlands into the urbanization processes that are arranged, among other ways, by the reduction of distances and time between production, circulation, and consumption. Where there is an integration of markets, there is a promotion of spaces – abstract and material – of consumption and, therefore, an explosion of logistical processes and their correspondents in the built environment.

Urbanization, thus, has been experiencing a logistical phase in which cities – and other types of agglomerations – comprise its materiality. This logistical phase, more than cities, produces positionalities in the space-time configuration of contemporary capitalism. It is a two-way street, therefore, because urbanization produces positionalities, while positionalities produce cities with specific roles in the division of labor.

Cuppini (2018, p. 305) argues that contemporary logistics is entangled in the urban and in political and economic decisions that involve a series of conflicts, as what

circulates produces power. The physical conditions for such circulation, in turn, are in the urban centers:

> It is in this direction that one can then situate logistics, as a matrix of urban production and new spatialities, as a process that is permanently in contestation and dispute, a characteristic that is, in fact, distinctive to the genesis of the city since its origin. This is, therefore, the double and ambivalent face of logistics that we must look at today, in order to question urban mutations and their trans-scalar development associated with the circulation and consumption of goods, all of which make the city a hub, without failing to see the series of conflicts that arise throughout this process (Cuppini, 2018, p. 305).

Diniz and Gonçalvez (2022) highlight logistics urbanization as a process and logistic cities as a form, both guided by the creation of large infrastructures and logistics projects that are essential for the general circulation of capital. According to these authors, logistics urbanization involves the creation of spaces that focus on the technical-scientific-informational environment, with the aim of improving the fluidity of capital, reducing distribution and circulation times and costs.

The spatial configurations resulting from this specific form of urbanization may vary. They all support, however, the current forms of circulation (Diniz; Gonçalves, 2022, p. 9). Sengpiehl (2008 apud Diniz; Gonçalves, 2022) associates logistics urbanization with densely populated metropolitan areas, both in terms of physical facilities and distribution points, with the metropolis itself operating as a logistics platform.

Barros (2024), however, highlights logistics as a promoter of restructuring also in non-metropolitan realities, producing vectors and areas specifically designed for the circulation of capital. This circulation, in turn, presents particularities in combining both fixed capital and fictitious capital when considering the current financial funds investing in logistics infrastructures.

In summary, we highlight the intricate relationship between urbanization and capitalism, now underlining the importance of logistics and circulation as fundamental elements. We emphasize the capacity of infrastructures to expand cities and contribute to the formation of new centralities, both from the standpoint of cities and networks. This is because logistics urbanization is influenced by centrifugal and centripetal forces: external vectors are needed to disperse activities – and cities – for the network to

operate better, just as forces are needed to concentrate activities in certain urban areas. Network interactivity can lead to the densification of infrastructures in some areas, just as this densification can generate network interactions.

Scalar mediations and infrastructural plots

In a globalized and competitive world, we assume that the more amenities and logistical, economic and regulatory facilities a city has, the more attractive it will be for the installation and consolidation of public and private agents. According to Sheppard (2002, p. 311), *"this competitive advantage enables them to channel the uncertainties of globalization to their advantage because they offer attractive conditions for globally mobile investment capital."*

These facilities and services require the spatial and fixed scale of cities and urban agglomerations for better circulation of capital. This argument is corroborated by Brenner (1998, p. 461), for whom there is an inseparability between fixity and fluidity, or between space and time:

> The contradiction between fixity and motion in the circulation of capital – between capital's necessary dependence on territory or place and its space-annithilating tendencies – for the changing scalar organization of capitalism (…) capital necessarily depends upon relatively fixed and immobile territorial infrastructures, such as urban-regional agglomerations and territorial states, which are in turn always organized upon multiple, intertwined geographical scales.

In turn, the production of fixed infrastructures and equipment endows urban centers with roles and duties that alter their positionality in relational space-time within the globalized economy. According Sheppard (2002, p. 307), one must emphasize the importance of connections between territories and their geographic location, based on a relative positionality. The debate on networks, scales, and places, according to this author, must be accompanied by arguments about positionality, since *"I advance the idea of positionality as a way of capturing the shifting, asymmetric, and path-dependent ways in which the futures of places depend on their interdependencies with other places […]."* We will thus address positionality here as a way of understanding the

permanences and ruptures involved in the configuration of different networks and scales that, by enabling different combinations, involve cities in a plot.

Taking the urban network and the articulations between different cities as a backdrop, we can see that plots that involve cities, in their lines and points, corroborate their positionality in space-time. Considering the urban scale in relation to the materiality of socio-spatial processes that occur on several other scales (Brenner, 2013), it is possible to trace a geographic kaleidoscope of capitalist social relations that is permeated by and permeates countless scalar plots.

When considering infrastructures beyond their physical components, we can conceive that they help in the positionality of a city to the extent that they comprise elements that conglomerate both spatial and temporal aspects. That is, infrastructures are fixed in the city and are responsible for producing them as materiality, but they also condition an acceleration of time – especially of capital rotation – that alters the relationships within the networks and the space-time insertion of cities in the territorial division of labor.

Within the plots, we have infrastructural lines and points. The lines, in this case, comprise highways, railways, waterways, optical fibers, etc. that, when united, tend to concentrate in one point, such as ports, airports, and logistics warehouses, among others. The encounter between these points and possible connections generates fabrics, preferably urban ones, which, in turn, are sewn and involved by different weavings. All of this dynamic is, to a large extent, guided by distinct intentions, temporalities and spatialities, guaranteeing specific roles and functions for each city in its external relations.

When we are in a network-based society, the more conditions a city has to be connected to other areas and points, i.e., the more involved it is in infrastructural – and scalar – plots, the better positioned it will be in the face of the demands of capitalist accumulation. The concentration of infrastructures, then, allows for greater interactivity of cities within the scope of networks and in their relationship with the urban scale.

Positionality is thus produced from the plot of relations guided by the spatiotemporal distribution of infrastructures. Each city presents a positionality, as syntheses in its spaces materialize different scalar combinations. Positioning oneself

means belonging to the plot of relations shaped by the distribution and organization of infrastructures in their multi-scalar articulations.

Lojkine (1997) argues that the "urban framework" emerges from the network of cities, of different hierarchies, which are organized based on the social and spatial distribution of the general conditions of production. There are, thus, infrastructures and services that attribute privileged uses and functions and roles to each city, thereby conditioning their positionality in the networks. For example, ports, industries, distribution centers, etc., corroborate the intermediation between cities – where these facilities are located – and the territorial division of labor itself.

The capitalist city is the locus of concentration of the main means of reproduction of capital and labor force. In fact, there is a tendency for cities to grow and expand, subsequently developing urban agglomerations, based on the interest of capitalists in reducing the time of production, circulation and completion of the process of capital accumulation.

Also, from this standpoint, Lojkine (1997, p. 174) puts forward the hypothesis that the development of urban agglomerations is "determined by the constant tendency of capitalism to reduce the time of production and the time of circulation of capital." This, in turn, necessarily involves better connections of infrastructural plots, or the combination and interrelation of multiple networks and scales.

Silveira (2015, p. 63) argues that "logistics, as well as transportation and storage infrastructures, further drives the structuring of geoeconomic space by conditioning patterns of territorial organization and the location of activities." The distribution of activities and infrastructures, as well as their organization in relation to the division of labor, can be understood based not only on the structuring of geoeconomic space, but in its relationship with the multiscalar networks that also comprise it.

Caravaca (2022, p. 25) demonstrates that, based on the diffusion of neoliberal ideology and the dominant economic logic that superimposes the private over the public and tends to condition the concentration of capital to strategies such as privatization and deregulation, there is a *"[…] serious fundamental conflict between deregulatory tendencies, which allow ethically reprehensible behaviors […]."*

The author further argues that changes in technological standards and the subsequent reorganization of companies, distribution strategies, production relations

and location of these different activities have generated a series of gaps in social and collective rights due to some factors, such as the flexibilization of labor rights and a greater centralization of capital, increasing the competitiveness of companies – increasingly relocated and with fewer returns to their places of origin. Caravaca (2022, p. 29) summarizes:

> One cannot ignore the fact that new technologies also significantly affect societies by modifying forms of work and ways of life. On the one hand, some skills that were previously highly valued end up being superfluous, altering the demand for labor and, subsequentnly, the behavior of labor markets. On the other hand, certain changes that initially seem beneficial can have side effects – social and cultural – that are not always positive for society as a whole.

Changes in space-time and in the positioning of urban centers do not correspond to a greater possibility of social mobility. Alternatively, there is an even greater increase in distances for the layers that are less tied to hegemonic capital, and this materializes, particularly in the space of cities, from socio-spatial inequalities. Below, we will delimit five pairs that deal with the relations between logistics and cities, pointing out vectors and rhythms of ongoing processes.

Relational pairs of/in the relations between logistics and cities

Based on the debate on geographic scales and the possibility of logistics as a mediation of ongoing urbanization processes, we can infer different spatialities that materialize in and from cities: both the reticular flows that start from infrastructures and different establishments, such as distribution centers, and the production of the built environment that reaches these infrastructures, expanding urban areas and nuclei.

Normative density (Santos; Silveira, 1996, p. 19), in this case, accompanies this expansion and provides the necessary support for more verticalized agents and scales to assume control and plunder both fixed assets and flows:

> Normative density indicates the different degrees of openness of the place regarding verticalization. Currently, the world seeks to revoke the plurality of regulatory frameworks in order to affirm a single regulation. The result of this act of empire in places will be normative density. In areas where market law and other global norms act more profoundly, facing the meager resistance of

> local norms, we would identify a greater normative density and, therefore, a more aggressive and perfected construction of the global order. This is the example of free zones and tax havens, where the norms of the various segments of the State bow to the imperatives of competitiveness and fluidity.

The competitiveness indicated by logistics establishments, in the contemporary period, comprise hegemonic manifestations in/of the production of space. The cohesion of infrastructures, the normative density and the spatial selectivity in the installation of general conditions of production, for example, highlight axes of privatization of space and the corporate control of flows, in which intermediate scales, such as the urban one, correspond to the materialization of arrangements of interests and intentions.

All of this reflects the potential that a city can assume within a capitalist logic of competition based on the intersection of its different agents as vectors of structuring and restructuring (economic and urban). The flows that emerge from these vectors presuppose the accessibility that agents have in reaching – and appropriating – certain spaces.

The *introversion-extroversion* pair helps us to think about how infrastructures and logistics establishments concatenate vectors that sometimes turn inwards and sometimes outwards. One could use the notions of centripetal and centrifugal forces, as proposed by Krugman (1996), who highlighted how centripetal forces attract population and production to agglomerations, while centrifugal forces tend to disperse these agglomerations by distributing activities. We chose introversion-extroversion, however, in order to emphasize the characteristics of communication, as logistics works as a mediation between distinct areas through the regulation of distribution and circulation. Considering communication, in this context, implies considering the different scales involved.

We emphasize introversion to show how logistics can introvert the city, placing it in the interior and making it the center of its actions, producing segments and areas designated for this purpose on a city scale and, subsequently, stipulating the appreciation of urban land. Conversely, when considering projects and infrastructures from the standpoint of extroversion, we can understand their possibilities of transcending scales by becoming the point of communication between different urban centers.

When movements of introversion predominate over the ones associated with extroversion, we notice the influence of local agents and the continuity of the city's structuring processes. In turn, when extroversion is more pronounced, we identify multiscalar plots and an intensification of the urban restructuring process. These plots are multiscalar, as they are articulated by agents that act in different networks and processes that encompass several scales. This does not mean, however, that the vectors of introversion are less complex or incapable of organizing themselves into a network, but rather that their actions are more focused on the city and its dynamics.

Conditions of introversion and extroversion are largely conditioned by the spatial scope dictated by the dynamics of the cities and the region where the technical and regulatory networks are inserted, as well as by the cohesion of the different agents and their respective intentions. This relational pair serves as one of the backdrops for considering the connections and interactions between logistics and urbanization. It is crucial to understand that the production and incorporation of new areas by the logistics segment simultaneously combine internal and external factors.

The *agglomeration-interaction* pair is more than a cause and effect relationship – it represents an almost symbiotic relationship in which agglomeration and interaction are interdependent, feed off of each other, and benefit from each other.

Interaction is crucial for the consolidation of logistics activities, as it is the main content of this sector. In other words, the content of enterprises aimed at logistics can be summarized in the interaction they generate from the networks that circulate and subsidize them. There is no logistics without interaction, because this is the genesis of exchange. The forms resulting from interactions comprise geographic networks, which are social and exhibit their own spatiality (Corrêa, 2016, p. 133).

According to Corrêa (2016), spatial interactions play the role of carrying out the articulation between spatial forms and are distinguished by nature, speed, intensity, frequency, and direction. In summary, they are *"[...] the means by which spatial forms articulate with each other, performing the roles that assigned to them by spatial processes [...]. On the other hand, they are not only means, but also reflections and conditions of and for processes and forms"* (Corrêa, 2016, p. 132).

Initially, we chose to follow a direction opposite to agglomeration economies, which suggest the concentration of workers and companies from the same sector in a

specific geographic area to increase positive externalities and gains (Marshall, 1982). We assume that geographic networks, resulting from spatial interaction, may indicate the emergence of agglomerations, even on a reduced scale.

It appears that we are revisiting the past when discussing the emergence of agglomerations around networks, as happened with the railways and the development of São Paulo (Sposito, 2004). Nevertheless, it is increasingly important to focus on network interactions to analyze the new possible space-time configurations and the emergence of activities and dynamics that promote the formation of agglomerations, implying new complexities. While in the past, a single transport network was able to condition urban development, infrastructural plots today, largely influenced by multimodality, determine the positionality of agglomerations.

Now, when thinking about the path taken by agglomeration as a principle for logistics activities, it is necessary to highlight the spatial selectivity of the installation of the logistics network and investments in infrastructure in Brazil (Barros, 2021). There is no justification for the existence of a logistics establishment in an area where there is no agglomeration of technology, an efficient legal framework, and a producer and consumer market. In other words, there is no possibility of profitability for this sector in a poorly urbanized area. Agglomeration, therefore, supports interaction.

Logistics enterprises operate within the principle of agglomeration to achieve success, working alongside other activities and contributing to generating more agglomeration. These agglomerations can vary in terms of interactivity, some being more intense than others. They can arise from the enterprise or the group responsible, turning towards them, or they can consolidate themselves in the city as a new centrality. In any case, interaction and agglomeration produce a city.

When entering the scale of the city, we find a combination of densities and voids that make possible the consolidation of logistics vectors. The *density-void* pair sheds light on the possibility of territorial expansion caused by the combination of logistics and urbanization.

First, we would like to clarify that we use the term “void” here to describe an area about to be occupied, not in the sense of absence of a rule or content. The void is crucial for the consolidation of logistics enterprises, as it allows the expansion and consolidation of other enterprises, facilitating the creation of a centrality. Furthermore,

these voids comprise strategic areas for the incorporating capital to act in the urban organization of cities. Therefore, the void is full of interests and is only considered empty when compared to the concept of plenitude.

Returning to the origin of the French term *"terrain vague,"* we follow the ideas of Solà-Morales (2002), for whom *"terrain"* refers to extensive areas, linked to the physical idea of a land in a waiting condition, which is potentially usable. Conversely, *"vague"* combines the absence of activities with a sense of expectation and freedom. For the author, *"the void, therefore, appears as absence, but also as a promise, as an encounter, as a space of the possible, as the expectation"* (Solà-Morales, 2002, p. 187).

We highlight the possibility of expectation. Of speculation. The empty lots, which are content of the rapid growth of many non-metropolitan cities, for example, demonstrate part of the expansion driven by logistics. The explosions of infrastructures and logistics establishments and the production of built environments that focus on distribution and circulation demonstrate the capacity of both the logistics segment to associate with other agents producing cities.

Voids exist and are filled due to the conditions that density provides. In common sense, densification is often associated with a high concentration of buildings and people, among other elements. Density suggests something compact or with abundant content. Here, we wish to highlight the density that is not necessarily visible, but rather the actions that characterize an area as dense. It is the underlying structure that enables the development of a specific enterprise and supports both its built dimension and the existence – and potential – of empty spaces.

"Density is quite significant for the economic performance of the city" (Acioly; Davidson, 1998, p. 25). It is a fact taken into consideration by companies and public policies that are based on the accessibility of businesses. From this standpoint, we have an alignment with the principles of agglomeration economies and competitive advantages, as seen in Camagni (2005).

According to Santos and Silveira (1996), the spaces of globalization, the realm of the technical-scientific-informational environment, can be recognized by their densities: the technical density given by the various degrees of technical artifices and objects; the informational density derived largely from technology, which, in turn, informs us of the degrees of exteriority of the place and its propensity to enter into

relations with other places; and the normative density, as already mentioned in this text, which indicates the degrees of openness of the place to verticalization.

Densities are sometimes not visible, but they ensure the cohesion and operation of the built environment. In this sense, logistical density allows for the combination of technical and normative elements. The advancement of the technical-scientific-informational environment (Santos 1994, 2004), among other elements, has enabled changes in logistics: there are redirections that, more than ever, tend to focus on global spaces and scales, establishing direct bridges between urban centers and the external environment. As tempting as the reticular logic of logistics may be, one must return to the dimension of the city, which has a very high demand for logistical land aimed at the installation of distribution centers (public or private), making the land market and all real estate dynamics gain a central role in the most contemporary discussions regarding logistics (Raimbault, 2016).

We then have the relationship between density and emptiness. Gaps are necessary for the expansion of logistics and cities, but these gaps need to be linked to the density of networks – which guarantees the specific positionality of each city. Therefore, a connection with the external world is necessary, but attention is also needed to the singular elements in order to understand the particular dynamics that synthesize logistics – on its multiple scales – and the expansion of the city – in its multiple interests (Barros, 2024).

The *connection* and *disconnection* pair is directly linked to the development of a city's network relations and its positionality reinforced by logistics activities, which may be more or less connected. Nevertheless, this disconnection may suggest a stronger connection with other elements, such as those on a more local scale.

In studying the relationship between sea ports and cities, Hall and Clark (2011) demonstrate that disconnection has three simultaneous dimensions: spatial, economic, and institutional. Spatial disconnection is the separation of port functions from the urban space as a whole. Economic disconnection, in turn, demonstrates that port activities transcend the scale of the urban economy, evidencing that the interests of the port and the city are disconnected. Finally, institutional disconnection refers to the way ports are managed and the mismatch between urban governance and other levels of government.

These authors associate disconnection processes, to a large degree, with the containerization of economies of scale that allowed port activities to move inland, as well as a lack of direct dependence of these roles on urban development and its institutions. Therefore, these processes suggest situations in which an area presents elements that guarantee a continuous flow without being excessively fixed or dependent on any specific aspect, such as a city or legislation. To this end, there is a spread of logistics activities to intersections between maritime and land networks.

The risk that is faced, and which is linked to economic and institutional disconnection, consists of a disconnection between the production of logistics spaces and the production of cities. According to Raimbault (2015), there are two distinct processes for implementing logistics ventures: the installation of logistics in pre-existing industrial zones or the production of built environments dedicated to logistics. The first case results in an integration between urban development and logistics development, as there is a greater convergence of interests; while the second engenders a greater segmentation of space, since the interests are misaligned and sometimes belong to the urban center, sometimes to the logistics sector.

Logistics can then produce vectors for its own expansion, for the expansion of the city, or both. When there is a greater disconnection between interests and a lower normative density, ventures tend to be more linked to internal and singular scales of each city. The connection, guaranteed by the accessibility of networks and which repositions the city, is ensured by the connection, among other factors, of space, institutions, and the economy. Plots converge towards connection, even if disconnection is producing larger cities.

Urban expansion can lead to the homogenization of activities and, subsequently, to the segmentation and differentiation of spatial-temporal configurations due to the disconnections between the interests of the agents and their scales of action.

The development of an area dedicated to logistics activities demands greater integration between the parties, highlighting the role of landowners, and real estate developers, given the significant increase in demand for logistics areas. In this context, greater involvement of the State and public funds is also crucial to guarantee the density necessary to occupy these empty spaces, thereby maximizing opportunities for connection.

The possible spatial disconnection in the production of these logistics spaces is directly linked to the privatization of these areas and the infrastructures related to them. This occurs because specific areas are created with the capacity to operate on a larger scale, often isolated from other urban elements.

Connection and disconnection can be understood essentially by the levels of articulation between the parties involved. Disconnection does not necessarily mean complete disarticulation, but rather variations in the intensity and alignment of different fronts and interests.

As a relational pair and synthesis of the other pairs presented, we list *continuities* and *discontinuities*. In Sposito (2004; 2010; 2018), we see the importance of associating continuities and discontinuities with space and time. When thinking of discontinuity, for example, we have transformations related to the content of the city that are associated with discontinuities in/of urbanization, which refer to ruptures over time and changes in the course of urbanization. Territorial discontinuities are predicted by spatial continuities and materialize as a result of them:

> In fact, territorial discontinuity is often possible because spatial continuity is strengthened by the expansion of circulation and communication infrastructures (road systems, water supply or sewage collection systems, telephone, television and Internet networks, etc.) and by the diffusion of access to equipment that enables movement and contact (motor vehicles, antennas, microcomputers, etc.). When these two dynamics – territorial discontinuity and spatial continuity – occur simultaneously and are articulated, it is possible to recognize, at the level of the urban form, the constitution of ruptures in the urban fabric and, at the level of dynamics and processes, the achievement of spatial integration (Sposito, 2004, p. 204).

We believe that by expanding cities territorially, logistics and its forms cause ruptures in land use. In this sense, the sector is located at the confluence between discontinuities and continuities, as they are far from the traditional city centers, being located on expansion axes, but obey a logic marked by interconnected points that are linked, mainly, to the demands and requirements of the entire urban network.

Despite the territorial discontinuities, urban logic is marked by other spatiotemporal processes such as spatial continuity, homogenization of the spatial production process, heterogenization of the role and functions of cities, interconnection of geographic scales, and greater mobility of capital (Catelan, 2013), which are part of

the range of possible spatial interactions. The relationship between continuities and discontinuities is, therefore, yet another relationship of scales.

The different rhythms can be understood and synthesized based on the continuities and discontinuities and their relationships with four other relational pairs presented here (Chart 1):

The idea of adding the rhythm vector as an analytical element of the aforementioned pairs is in line with demonstrating the movement of the relationships between logistics and urbanization. Furthermore, based on the continuities and discontinuities, it is possible to understand such movements and dynamics in different ways in association with the ongoing processes and their spatial results, which sometimes indicate that the aforementioned pairs are complementary, and sometimes opposite, in complex plots that involve different scales, networks, and agents.

Chart 1 – Summary of the pairs and their rhythms

	Introversion and Extroversion	**Agglomeration and Interaction**	**Density and Emptiness**	**Connection and Disconnection**
Rhythms	They point to permanences and ruptures. As a rhythm becomes faster and targets the turnover time of the capitals involved, the areas tend to be more extroverted and have greater communication with other scales. Spatial continuity ensures the rhythm of relationships even at the cost of producing territorial gaps.	The rhythm of interaction is dictated by spatial continuities as a city, or a logistics enterprise, and is more or less interactive depending on the networks they occupy. In turn, the agglomeration that may arise from interactions is produced from a territorial discontinuity.	The rhythm of voids is directly related to the interest of speculative agents. The existence of voids presupposes discontinuities, but the rhythm is dictated by continuous relationships.	The rhythms of connection, although initially considered fast and intense, in this case demonstrate that they are highly dependent on local pairings. Unlike the rhythms of disconnections, which presuppose that an area per se can guarantee network interactions without directly depending on the city, with the rhythm dictated by the success of a logistics enterprise.

Source: Adapted from Barros, 2024.

Final Remarks

The guiding thread of this text is, directly or indirectly, the relationship between the different geographic scales. It is direct when we think of the different compositions of plots that arise from the relationships between logistics and urbanization, and indirect when we think of the content of the relational pairs discussed here.

The idea of plots aims to represent different possibilities of weaving geographic scales and the production of urban space, considering the concrete elements of logistics, but also the regulatory frameworks and normative density. The norms and techniques (which are social and, thus, intentional developments) act in space-time and generate infrastructure systems, mediated and regulated by logistics, participating in processes of urban and city restructuring, for example.

Logistics becomes an aspect of the privatization of urban space. The speed of interactions today and the goal of reducing the time between production and consumption highlight logistics as a central element in the current phase of capitalist accumulation. Thus, logistics begins to play a significant role in the production of space, favoring the search for privatized areas with financial characteristics. Facilities such as warehouses and large logistics centers are increasingly taking up space in urban centers, impacting consumption patterns and causing changes in the social division of space.

The urban network is a major backdrop for the organization of other networks, for example, conditioning public and private investments in infrastructures that, in turn, comprise considered competitive advantages for certain urban centers. We highlight, mainly, the role of the State as an agent that provides these infrastructures in socio-spatial formations such as Brazil. We emphasize, however, the combination of public funds with the interests of private agents who tend to locate themselves where there is a better framework, not only at the technical level, but also from a normative standpoint. Based on the rounds of neoliberalization and the rescaling of the State (Brandão, 2017), we observe its different actions and coalitions in the production of infrastructures and, subsequently, in the production of spaces and changes in their relations with time.

The redefinition of distances and the change in the positionality of cities in hegemonic networks are not, however, accompanied by possibilities of social mobility for most people. This is because social relations are scaled and distributed in an unequal

geometry – and geography – of powers. The production of infrastructures in an increasingly exploitative way, related to private interests, corroborates the capitalist production of cities, which, as we know, occurs on an unequal basis and without taking collective interests into account.

Acknowledgements

The author would like to thank the Research Support Foundation of the State of São Paulo (*Fundação de Amparo à Pesquisa do Estado de São Paulo*) (Proceeding No. 2020/00231-6) for financing the doctoral thesis that originated this article.

References

ACIOLY, C. DAVIDSON, F. **Densidade urbana. Um instrumento de planejamento e gestão urbana.** Rio de Janeiro: Mauad, 1998.

BARROS, S. F.S. **Portos secos e cidades**: tramas escalares e dinâmicas espaciais. Tese (Doutorado em Geografia). Universidade Estadual Paulista, Presidente Prudente, 2024, 246p.

BARROS, S. F. S. Portos secos e a rede logística brasileira: mediações teóricas sob a perspectiva dos processos escalares. **Terra Livre**, [S./l.], v. 1, n. 56, p. 56-85, Jan-Jun/2021.

BRANDÃO, C. A. Espaços estatais dos processos de neoliberalização e as recentes reestruturações regulatórias na Escala Nacional do Brasil. In: SUERTEGARY, D. M; SILVA, C. A.; PIRES, C. L. Z.; PAULA, C. Q. (Orgs.) **Geografia e Conjuntura Brasileira**. Rio de Janeiro: Consequência, pp. 35-58, 2017.

BRENNER, N. Between fixity and motion: accumulation, territorial organization and the historical geography of spatial scales. **Environment and Planning D**: Society and Space. [S./l.], v. 16, p. 459-481, 1998.

BRENNER, N. Reestruturação, reescalonamento e a questão urbana. **GEOUSP** – Espaço e Tempo, São Paulo, n. 33, p. 198-220, 2013.

BRENNER, N. Implosions-explosions: towards a study of planetary urbanization. Berlin: Jovis, 2014.

BRENNER, N.; SCHMID, C. Towards a new epistemology of the urban? City, [S./l.], v. 19, n. 2-3, p. 151-182, 2015.

CARAVACA, I. **El gran reto de la desigualdad – impactos socioespaciales**. Sevilla: Observatorio de Desigualdad Andalucia, 2022.

CASTRIOTA, R. Urbanização planetária ou revolução urbana? De volta à hipótese da urbanização completa da sociedade. **Rev. Bras. Estudos Urbanos e Regionais**, [S./l.], v. 18, n. 3, p. 507-523, 2016.

CATELAN, M. J. **Heterarquia Urbana**: Interações espaciais interescalares e cidades médias. São Paulo: Editora UNESP, 2013, 291p.

CORREA, R. L. Processos, formas e interações espaciais. **Revista Brasileira de Geografia**, [S./l.], v. 61, n. 1, p. 127-134, 2016.

CUPPINI, N. A cidade enquanto sistema logístico. **Lugar Comum**, [S./l.], n. 52, p. 299-305, 2018.

DARDOT, P.; LAVAL, C. **A nova razão do mundo**: ensaio sobre a sociedade neoliberal. São Paulo: Boitempo, 2016.

DINIZ, N.; GONÇALVES, P. P. A cidade dos galpões: dinâmicas e contradições da urbanização. **E-metropolis**, [S./l.], n. 49, ano 13, p. 6-15, 2022.

FRAGO I CLOLS, L. Logística y reestructuración metropolitana en el área de Barcelona. **Scripta Nova Revista Electrónica de Geografía y Ciencias Sociales**, Universitat de Barcelona, Vol XIX, n. 523, p. s/p, 2015.

HALL, P.; CLARK, A. Maritime ports and the politics of reconnection. In: Desfor, G.; Laidley, J.; Stevens, Q.; Schubert, D. (Orgs) **Transforming urban waterfronts**: fixity and flow. Routledge, 2011.

LEFEBVRE, H. **La revolución urbana**. Madrid: Alianza, 1976.

LOJKINE, J. **O Estado capitalista e a questão urbana**. São Paulo: Martins Fontes, 2 ed, 1997.

MORCUENDE, A. Diferenciación y fragmentación socioespacial: la contradicción campo-ciudad como teoría y como método. **GEOUSP**, [S./l.], v. 25, n. 2, p. 1-19, 2021.

RAIMBAULT, N. Géographie logistique et Géographies urbaines : l'hypothèse de la déconnexion. **Travail-Emploi-Formation**, [S./l.], n. 12, p. 101-127, 2015.

RAIMBAULT, N. Ancrer le capital dans les flux logistiques: la financiarisation de l'immobilier logistique. **Économic Régionale et Urbaine**. [S./l.], v. 1, p. 131-154, 2016.

SANTOS, M. **Técnica, espaço, tempo**: globalização e meio técnico-científico informacional. São Paulo: HUCITEC, 1994.

SANTOS, M. **A natureza do espaço**: técnica e tempo/razão e emoção. São Paulo: HUCITEC, 2004.

SANTOS, M.; SILVEIRA, M. L. Globalização e Geografia: a compartimentação do espaço. **Caderno Prudentino de Geografia**, [S./l.], n. 18, p. 5-17, 1996.

SHEPPARD, E. The spaces and times of globalization: place, scales, networks and posicionality. **Economic Geography**, [S./l.], v. 78, n. 3, p. 307-330, 2002.

SILVEIRA, M .R. Circulação, transportes, logística e a dinâmica capitalista: alguns apontamentos sobre as recentes reestruturações no Brasil. In: ARROYO, M.; CRUZ, R. C. A. (Orgs). **Território e circulação**: a dinâmica contraditória da globalização. São Paulo: Annablume Editora, 2015. p. 51-73.

SOLÀ-MORALES RUBIÓ, I. Terrain vague. In: SOLÀ-MORALES RUBIÓ, I ; **Territórios**. Barcelona: Gustavo Gili, 2002.

SPOSITO, M. E. B. **O chão em pedaços: urbanização, economia e cidades no estado de São Paulo**. 2004. 508f. Tese (Livre Docência) – Faculdade de Ciências e Tecnologia, Universidade Estadual Paulista, Presidente Prudente.

SPOSITO, M. E. B. Formas espaciais e papéis urbanos: as novas qualidades da cidade e do urbano. **CIDADES**, [S./l.], v. 7, n. 11, p. 123-147, 2010.

SPOSITO, M. E. B. O espaço e o tempo como continuidades e descontinuidades geográficas. In: SERPA, A.; CARLOS, A. F. (Org). **Geografia Urbana**: desafios teóricos contemporâneos. Salvador: EDUFBA, 2018.

Author

Samarane Fonseca de Souza Barros – She holds a degree in Geography from the Federal University of Viçosa (UFV), a Master's degree in Geography from the Federal University of Juiz de Fora (UFJF), and a PhD in Geography from the "Júlio de Mesquita Filho" São Paulo State University, Presidente Prudente campus (FCT UNESP). She is currently a professor at the Federal University of Juiz de Fora (UFJF).

Address: Campus Universitário, Rua José Lourenço Kelmer, s/n – São Pedro, Juiz de Fora, MG, CEP: 36036-900.

Article received at: July 10, 2024.

Article accepted at: August 17, 2024.

Article published on: September 15, 2024.