The productive restructuring and consolidation of the new vectors of territorial development:

the case of the Perimetrical Development Vector of the São Paulo Macrometropolis

Reestruturação produtiva e consolidação de novos eixos de desenvolvimento territorial:

o caso do Vetor de Desenvolvimento Perimetral da Macrometrópole Paulista

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Abstract: This paper analyzes the conception of the *Vetor de Desenvolvimento Perimetral* (Perimetrical Development Vector) of the São Paulo Macrometropolis as a linear axis of regional planning, which has been privileged by the spatial reorganization of the productive structure of the State of São Paulo. The collected data demonstrates that the state planning agencies have made huge investments in the interregional transport infrastructures, in order to provide this regional axis - between Sorocaba, Campinas, São José dos Campos and the port of São Sebastião - with excellent conditions to attract the most modern sectors of contemporary industry to the location, and thus consolidate it as the main corridor of production and flow of goods related to the new industrial standards.

Keywords: Productive corridor; Regional axes; São Paulo Macrometropolis; Productive restructuring; Perimetrical Development Vector.

Resumo: Analisa-se, neste artigo, a concepção do Vetor de Desenvolvimento Perimetral da Macrometrópole Paulista como um eixo linear de planejamento territorial privilegiado na reorganização espacial da estrutura produtiva paulista. Os dados apresentados demonstram que há, por parte dos órgãos estaduais de planejamento do Estado, um grande volume de investimentos em infraestruturas de transporte inter-regional, cujo objetivo é dotar esse eixo territorial entre Sorocaba, Campinas, São José dos Campos e o porto de São Sebastião de ótimas condições para atrair a localização dos setores mais modernos da indústria contemporânea e, por conseguinte, consolidá-lo como o principal corredor de produção e escoamento de mercadorias relacionadas aos novos padrões industriais/logísticos.

Palavras-chave: Corredor produtivo; Eixos regionais; Macrometrópole Paulista; Reestruturação produtiva; Vetor de Desenvolvimento Perimetral.

Author contributions: A. theoretical-conceptual basis and problematization; **B.** data collection and statistical analysis; **C**. production of figures and tables; **D**. photographs; **E**. preparation and writing of the text; **F**. selection of references.
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INTRODUCTION

The process of restructuring the international division of labor and the global production chain, over the final decades of the twentieth century, has been the driving force behind a number of transformations in the territorial organization of urbanization in the State of São Paulo. Such a process of productive restructuring may, in brief, be described through the collapse of the hegemonic structure of the Fordist model of production, based on "repetitive techniques of mass production for mass markets", and by "price competition and [...] the lowering of the unit cost of production" and the gradual introduction of the "Toyotist model", in turn, characterized by a greater turnover rate of the workforce, specialization of the productive sectors, privatization and a reduction of state enterprises (BODDY, 1989).

The flexibilization and globalization of the productive chain and the model of capital accumulation and circulation are also linked to the reorganization - on a major scale - of the geography of productive structures, logistical networks and - to a lesser extent - urban occupation (GUNN, 2009). There has been, therefore, an emergence of new regions more prone to Toyotist production - places more adapted to the more modern productive sectors -, characterized by the preponderance of activities in which there is a predominance of knowledge and technical and scientific information (ASCHER, 2010). These places are typically situated within a technical-scientific-informational environment, with a greater density of technological infrastructures that support the expansion of contemporary economic activities (SANTOS, 1998).

In this context, the activity of logistics plays a decisive role in organizing the circulation of goods throughout the territory, ensuring that the connection networks of production, assembly and supply of consumer markets operate efficiently. Thus, regions with a greater availability and modal variety of transport infrastructures possess locational advantages over others, since they promote a faster circulation of people and goods and, consequently, attract more companies and investments (PRETECEILLE, VALADARES, 1990). This peculiarity of the contemporary period is responsible for the formation of what Georges Benko terms "technopoles", regions with a greater capacity to attract innovative economic activities due to factors such as the availability of skilled labor, universities and research institutes, transport infrastructures and services (BENKO, 1999). In the particular case of countries with tardy industrial development, such as Brazil, these are places that belong to regions that historically have concentrated most of the country's capital investment and production structure, intensifying what David Harvey (2005) conceptualized as uneven geographical development (HARVEY, 2005).

As demonstrated in the text, a change has taken place in the form of territorial planning in the State of São Paulo closely tied to an attempt to adapt to the new market demands. Thus, the concept of industrial development poles, put into practice throughout the twentieth century, was abandoned to adopt the idea of vectors of interregional linear development. The Perimetrical Development Vector (PDV) of the São Paulo Macrometropolis (SPMM), which, linking the regions of Sorocaba, Campinas, São José dos Campos and São Sebastião, connects the most attractive territories to the localization of the most modern economic activities. The present article highlights the role played by this region in planning the São Paulo Macrometropolis, emphasizing the proposals for major investments to expand - even further - the advanced technical infrastructure of circulation and to establish this

vector as the main corridor for state production and export in the medium term.

The text presents, in the first two topics, the change in focus of the regionalization, moving from the industrial development poles to the conception of the São Paulo Macrometropolis as a priority scale for contemporary territorial planning. The third topic addresses the concentration of investments in circulation infrastructure forecast for the territorial profile of the Perimetrical Development Vector, affirming the hypothesis that there is an intention to transform it into the state's main axis of production and dispatch route for goods in the medium term.

THE INDUSTRIAL DEVELOPMENT POLES IN THE STATE OF SÃO PAULO

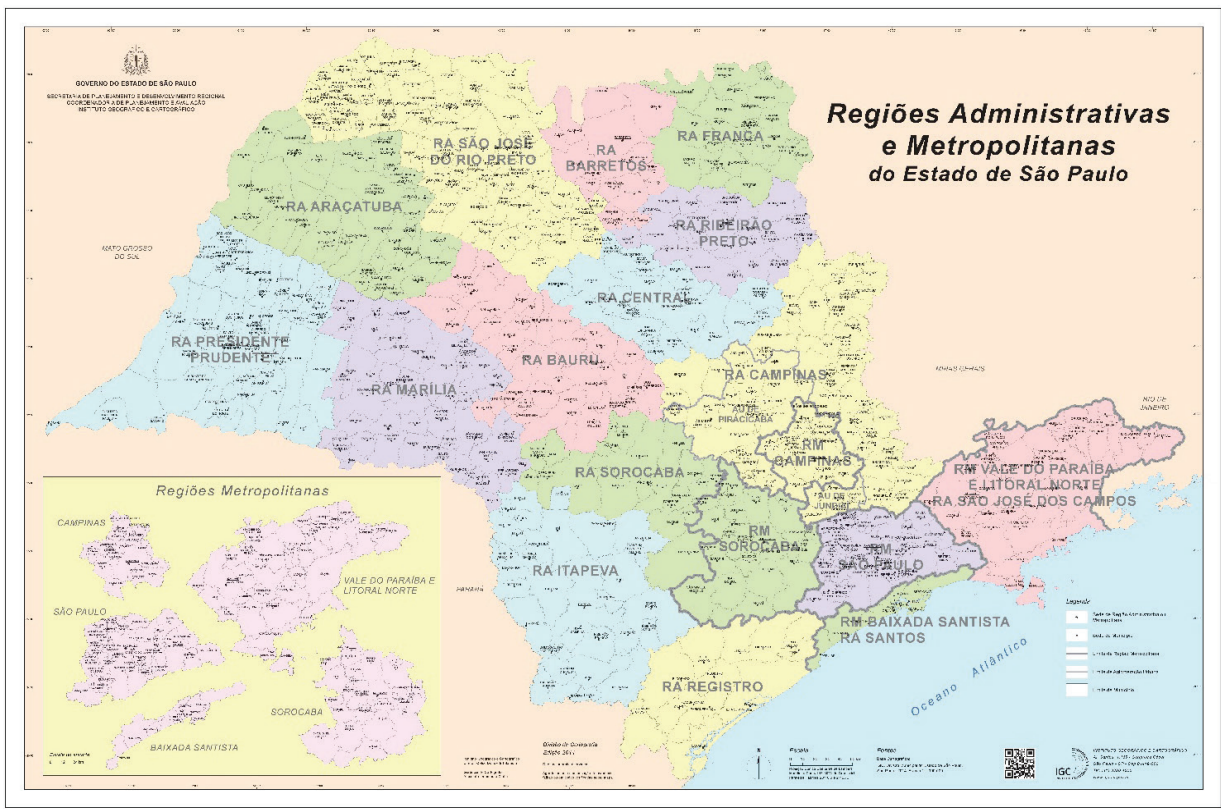
As defined by Roberto Lobato Côrrea (2000), the concept of region is related to a deliberate act of territorial delimitation with a certain level of homogeneity - natural, economic, cultural, and so on. -, with the aim of managing and administering it (Corrêa, 2000). This is to say, the same territory may be divided with different regional organizations, according to different strategies of regionalization. For Rogério Haesbaert, the unifying and homogenizing tendencies of the current stage of globalization do not produce a "de-regionalized" territory. On the contrary in fact, instead of equality between regions, new regional tendencies are produced which, in general, further increase historical regional inequalities by feeding on differentiations between regions to induce economic concentration in historically privileged places in the process of regional differentiation. Thus, contemporary regionalization acquires a more complex appearance, enabling regions to interconnect in information networks without spatial continuity. Therefore, it is not possible

> [...] generically, to seek to stipulate a single broad rationality or "theory" of regionalization, unless we maintain the old economistic patterns in which the region has very often functioned - as if only the reproduction and accumulation of capital could account for all the regional diversity into which we are inserted. (HAESBAERT, 2010, p. 5) (This and all Portuguese citations hereafter have been translated by the authors.)

In order to analyze the history of regionalization in the State of São Paulo, the segmentation proposed by Silva Neto (2003) has been employed, according to which the conduct of regional policy may be divided into two periods, which express different political-territorial strategies of regionalization: "historical-administrative regionalization" and "unifying-complex regionalization". According to the author, the inflection point was the period of redemocratization and the promulgation of the 1988 Constitution, when centralizing territorial strategies of the military regime gave way to decentralized regional policies linked to the "globalization project" regarding territory - especially the metropolises (SILVA NETO, 2003). In both periods, the economic aspect was the main driving force of regional policies. While in the first, the hierarchical control exercised by central power was the method with which to guarantee the economic integration of the country's different regions, in the second, the apparent easing of state structures for territorial control was the method with which to attract large multinational companies to the regions.

The "historical-administrative regionalization" endured right from the first studies for the regionalization of São Paulo conducted by Father Louis-Joseph Lebret for the Interstate Commission of the Paraná-Uruguay Basin (CIBPU) in the 1950s, until the 1990s when regional planning was strengthened, focusing on the territorial profile of the São Paulo Macrometropolis. Lebret's team, the Society for Graphic and Mechanographic Analysis (SAGMACS), conducted the studies "Problems of Development: The Needs and Potential of the State of São Paulo" (1952) and "The Urban Structure of the São Paulo Agglomeration" (1957), in which a regionalization strategy was proposed based on poles of regional development in the interior, with the aim of balancing the economic development between the regions of the state. The works of Lebret later influenced the *Plano de Ação do Governo do Estado* (State Government Action Plan[known in Portuguese as PAGE]), during the administration of Carvalho Pinto in 1959, which specified the administrative division of the state into 11 regions (later deriving the *Administrative Regions*, *Administrative Subregions* and *Government Regions* [SAGMACS][1]), according to the areas of influence of the development poles proposed by (CORDOVIL & CESTARO, 2016). The intention of promoting the decentralization of state political power and granting greater autonomy to the interior regions of the state did not go beyond rhetoric, without the creation of tools that in fact would confer autonomy for political decisions onto each region (SILVA NETO, 2003).

1 Decree 48.162 dated July 3, 1967, stipulated the creation of 10 Administrative Regions and 48 administrative sub-regions. Decree No. 22,592, dated August 22, 1984, created 42 Government Regions to replace the Administrative Sub-Regions, while maintaining a very similar regional division.



Map 1: The regionalization of the State of São Paulo into Administrative Regions and Government Regions. Source: Instituto Geográfico e Cartográfico, State of São Paulo.

This regionalization model acted as the basis for implementing the program of production deconcentration in the state, through progressive investment in circulation

infrastructures (especially highways) and in the creation of industrial districts in some of the cities in the interior of the state of São Paulo. During the same period, the Development Decentralizing Highway Plan (known in Portuguese as PROINDE) was created, which resulted in the construction of new highways, such as the Bandeirantes, Imigrantes and Trabalhadores Highways, and in the modernization of existing roads. This infrastructural development of the highways was the main factor that induced the dislocation of the then concentrated industrial park of Greater São Paulo into regions in the interior of the state. Alongside establishing the São Paulo highway network system, the industrial production of the interior increased vertiginously, from 25.3% of the value of industrial transformation produced in the state in 1970, to 43.4% in 1985 (a proportion that continued growing, and reached 53.4% % in 2002 and 32.1% in 2015) (SEADE, 2017).

However, such a planning model was centered on the idea that the seat of regional power was the point for irradiating industrialization and economic power. Hence, for example, the idea was to create industrial districts at the centers of regional power, as points that would receive tax incentives and infrastructure investments so as to attract new companies to the location. It was no coincidence that most of the state's industrial districts eventually failed over time, since they were conceived as an agglomeration of businesses at a particular point within the territory. Thus, the main attraction of the interior regions was lost: the possibility of companies having a flexible location along the highways according to their own logistic networks, enabling them to be closer to raw materials and/or consumer markets and export/import ports for goods.

THE SÃO PAULO MACROMETROPOLIS AND THE TERRITORIAL PLANNING BASED ON INTER-REGIONAL VECTORS

With the 1988 Constitution, there began a progressively increasing process to bring local autonomy to municipal powers in relation to the state and federal governments, taking into account the demands for a greater liberalization of the national economy (SERRA, 1991). Thus, the period of "unifying-complex regionalization" began (SILVA NETO, 2003), characterized in the State of São Paulo by the creation of five metropolitan regions[2] in the interior and by formalizing the concept of a megalopolitan conurbation - the São Paulo Macrometropolis. As a result, the regional asymmetries of São Paulo were widened: on the one hand, there were the regions of greater economic and urban[3] development, benefited by the creation of metropolitan regions and urban agglomerations, which granted them greater amounts of public funds and investments; and on the other, the regions that continued with their planning caught at a standstill in the ineffective administrative regions and government regions.

The concept of the São Paulo Macrometropolis represented a transformation in the guiding strategy of the state's territorial planning, which, by leaving aside the concept of urban-industrial poles as sources of economic development, began to focus on the design of an urban mega-region. Thus, it was no longer the industrial poles, but rather the integration of the regions that made up the Macrometropolis, which was to become the great bait for attracting new companies and investments. The regionalization based on development poles gave way to a "unifying-complex"

2 The metropolitan regions of Baixada Santista (1996) and Campinas (2000) were the first to be formed in the interior, followed more than a decade later by the metropolitan regions of Vale do Paraíba and Litoral Norte (2012), Sorocaba (2014) and Ribeirão Preto (2016).

3 In this case, there are the urban agglomerations of Jundiaí and Piracicaba.

regional policy, which was, in the concept of *territorial vectors* - formed along the main transport and circulation routes that connected the urban poles of the previous period - the main strategy for generating economic development.

Instituting the São Paul Macrometropolis as a figure of territorial planning came to formalize the regional plans of the mid-twentieth century, in which the established hypothesis was that of disseminating a typically metropolitan way of life and of functioning towards the immediate surroundings of Greater São Paulo – recognized at the time as the only metropolitan area of the state – and accompanying the deconcentration of the capital's industrial production towards new industrial poles in the interior (SÃO PAULO, [STATE], 2001). Recognizing this process of macro-metropolitan conurbation, in 1996, the Empresa Paulista de Planejamento Metropolitano SA (known as Emplasa) presented the plan of the Expanded Metropolitan Complex (CME), a concept that had already been used to designate the territory resulting from the expansion of the functions and services of the Metropolitan Region of Greater São Paulo to the neighboring metropoles. In this case, the direct expansion of the metropolitan functions of the capital towards the state interior was maintained as a key idea, more precisely for a quadrangular area between Campinas, São José dos Campos, Santos and Sorocaba, with the capital as the control and decision-making center of this macro-region.

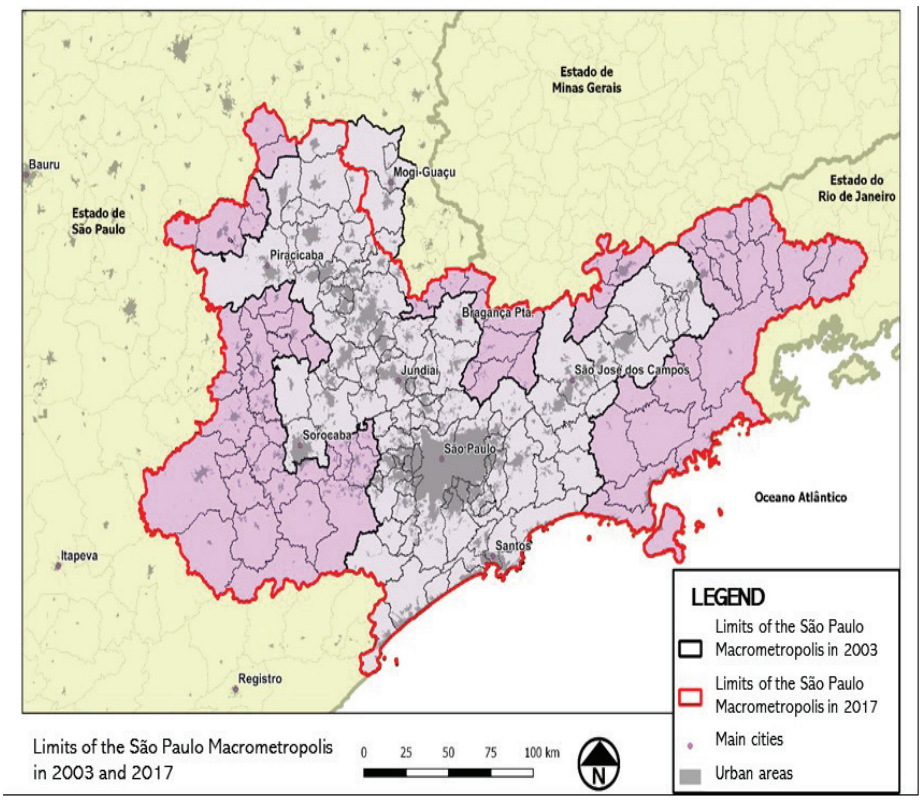
The concept of the São Paulo Macrometropolis appeared in the documentation of the regional planning for the State of São Paulo in 1993, in a study that defined a vast area of metropolitan influence, which was formed by three metropoles, São Paulo, Campinas and Baixada Santista. Together with other urban agglomerations and microregions, this vast territory constituted the Region of Interest for Metropolitan Planning or the São Paulo Macrometropolis. Unlike the Expanded Metropolitan Complex concept - centered on the direct expansion of activities from the capital towards the interior - the vision of the Macrometropolis was centered on the conformation of a more complex urban-regional phenomenon, composed of links between urban agglomerations of various sizes that tended towards the homogenization of its economic and social processes:

> Thus, the territory of the SPMM should not be understood as simply resulting from the delimitation of the four metropolitan regions, three urban agglomerations and two microregions that are integrated within it. This in fact covers, as proposed in the PAM[4], a territorial designation attributed to an area of interest in the macro-metropolitan planning of the state. Thus, it is conceived not only as a physical-spatial, geographical or economic entity, but also as a geopolitical construction, insofar as it consists of a territory, the configuration of which is based on criteria and technical concepts incorporated by the state government. (EMPLASA, 2015b, p. 22)

4 The São Paulo Macrometropolis Action Plan.

From 2010, the territorial profile of the São Paulo Macrometropolis was resumed with a concept that has guided regional planning in São Paulo to the present day: the formation of what was called "an extensive urban region derived from the internalization of economic development and productive and population deconcentration of the Metropolitan Region of São Paulo (RMSP), recognizing that "the conurbation between municipalities was not only made complete by the presence of protected areas and the existence of physical barriers" (EMPLASA, 2015b, p.16).

The different plans launched by the state government have altered the territorial profile of the São Paulo Macrometropolis over time, according to the changes in the regional organization of the State, with the creation and alteration of metropolitan regions, urban agglomerations and microregions. The most important differences between regions are those of 2003 and those of today, launched in 2010, as may be observed on Map 2.



Map 2: A comparison of the São Paulo Macrometropolis limits in 2003 and 2017. Produced by the author with information from EMPLASA, 2015.

The definition of the São Paulo Macrometropolis in 2003 was more restricted to the main axes of physical conurbation and emphasized the vector of the Anhanguera Highway, between São Paulo, Jundiaí, Campinas and Piracicaba (including the vector towards Mogi-Guaçu, the only region to be excluded from the current delimitation), and to the Presidente Dutra Highway, between the capital, São José dos Campos and Taubaté.

The current territorial profile is more comprehensive, encompassing all the regional entities currently included within this territory: the metropolitan areas of São Paulo, Baixada Santista, Campinas, Sorocaba and Vale do Paraíba and Litoral Norte (the last two metropolitan areas had not yet been created until 2003); the urban agglomerations of Jundiaí and Piracicaba; and the regional unit of Bragantina. Thus, important areas were included for the macro-metropolitan urban dynamics, especially the North Coast (the main beach resort of the state and site of the port of São Sebastião), as well as an area of intense urban expansion west of Sorocaba, along the Castello Branco Highway. Thus, the current macro-metropolitan design covers the urban-regional phenomenon in its greatest complexity of links, expressed by the various vectors of expansion through the interior that do not necessarily connect to

the capital, for example, the SP-75 Highway, between Campinas and Sorocaba, and the Dom Pedro Highway, between Campinas and the Paraíba Valley.

There is an emphasis on the flow system and circulation infrastructures as the main elements of spatial organization within the urban network that makes up the São Paulo Macrometropolis. The role of the highways is recognized as a form of structuring the urban conurbation and, at the same time, as structures that interconnect and section off the territory, organizing a network between several urban nodal points:

> It is a territory organized by a new pattern of urbanization - the extensive -, where the municipal and metropolitan physical limits are surpassed. There are, within it, service flows and systems that are organized into a network. Or a network of networks: a multi-linked urban system of housing, production, infrastructure, services and public and private facilities. (EMPLASA, 2014)

The demographic and economic concentration in the Macrometropolis is clear, within which, although accounting for only 21% of the total area of the state, 50% of the urban areas are located, 74% of the population and 83% of the state's gross domestic product (GDP) (EMPLASA, 2016). This takes into account the current perimeters of the Macrometropolis, which, due to the current spatial arrangements of the most recent metropolitan regions, covers areas of lesser demographic and urban relevance, such as the regions of Itapetininga and Alto Paraíba. If the limits of the Macrometropolis in 2003 are taken into consideration, which correspond to the vectors with the highest urban density, this proportion is even more relevant, accounting for approximately 12% of the area, 71% of the population and 78% of the state GDP (SEADE, 2010).

In this scenario, the São Paulo Macrometropolis would appear to be the State Government's investment in implementing national and international capital investments, whereby transport and communication infrastructures are the main attraction factors for new companies. Indeed, investing in regional transport infrastructure is a strategy to make the Macrometropolis viable as the main regional profile of the state in order to compete in the "territorial dispute" for attracting investments, as demonstrated by the Macrometropolis Action Plan itself:

> Networks are the basis of contemporaneity and the condition for realizing socioeconomic life. Because of its characteristics, the Macrometropolis is a region of strategic interest to ensure the competitiveness and economic projection of the State of São Paulo and, even, that of the country on the international scenario. Therefore, prioritizing the best functionality of this territory, through the execution of projects and linked actions that guarantee its quality and competitiveness, may have a significant impact on the other regions of the state and, consequently, on the lives of the people. This is due to the capacity to attract derived from its economic and urban dynamics. (EMPLASA, 2015a)

Amongst the items that have guided the São Paulo Macrometropolis Action Plan (PAM), is that of the "territorial connectivity, economic competitiveness and development infrastructure of the São Paulo Macrometropolis", the objective of which is to focus "some sectorial dimensions of development that respond through the conditions of connectivity and economic competitiveness of the

territory and that may guarantee that the region remains well-placed in the decisions to locate productive investments" (EMPLASA, 2015b, p.37). Issues such as logistics, transportation infrastructure and telecommunication are essential factors, according to this understanding, for the competitiveness of the SPMM in attracting productive investments.

It is no coincidence that in one of the more recent plans – i.e., the São Paulo Macrometropolis Action Plan 2013-2040: The future of the São Paulo metropolises - the São Paulo Macrometropolis has been sectorized according to the "Macro-metropolitan Development Vectors". These planning guidelines conceive the territory of São Paulo as a network of flows, structured by the circulation network of people, goods and commodities. Thus, the classification of the Macrometropolis is in six axes, which present more intense territorial interrelations between them: (1) The perimetrical development vector (between Sorocaba, Campinas, São José dos Campos and São Sebastião); (2) The metropolitan vector of São Paulo; (3) The development vector of the Paraíba Valley (along the Presidente Dutra Highway); (4) The export corridor vector (between the plateau and the port of Santos); (5) The Bandeirantes development vector (the axis along the Bandeirantes Highway, between São Paulo, Campinas, Rio Claro and Piracicaba); and (6) The development vector of Sorocaba (the axis along the Castello Branco Highway, between São Paulo and Sorocaba).

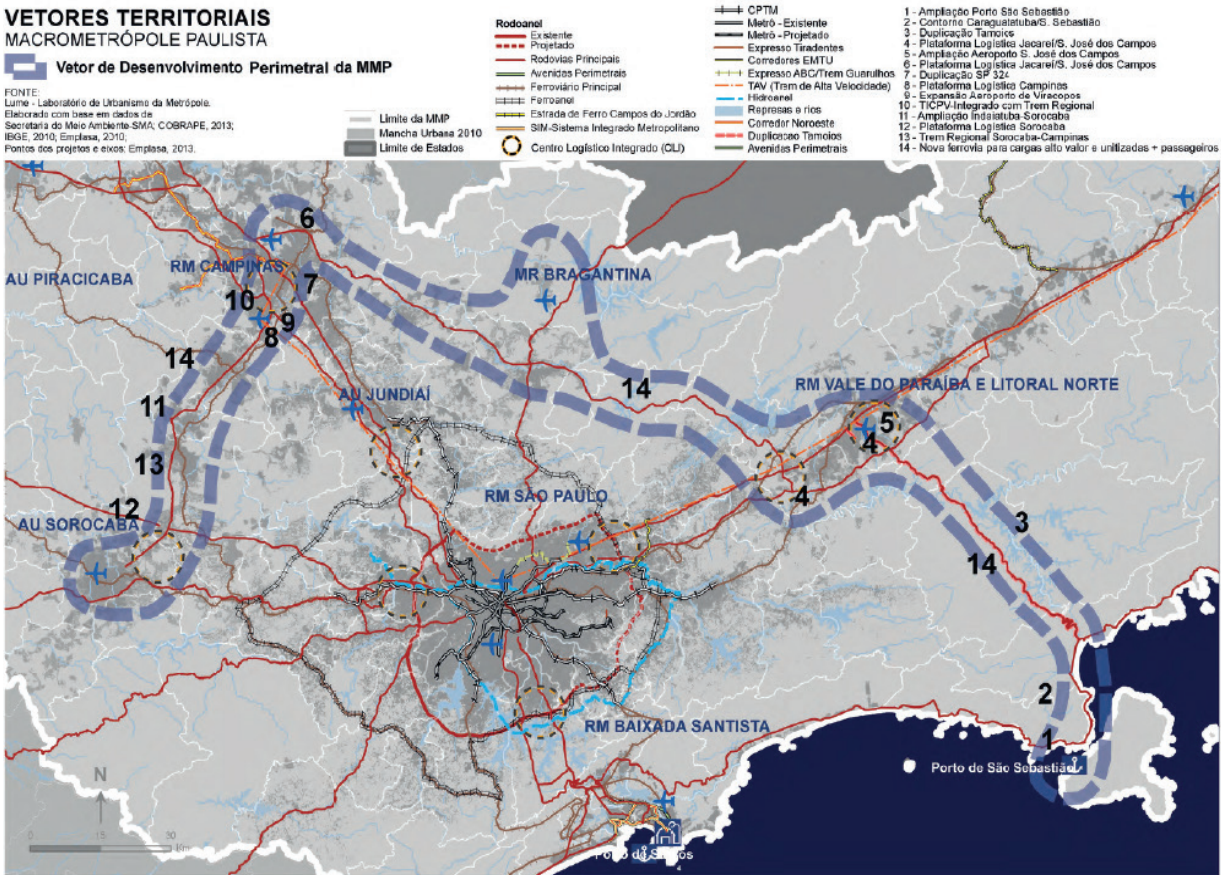
THE PERIMETRICAL DEVELOPMENT VECTOR AND ESTABLISHING AN AXIS FOR A CONCENTRATION OF TECHNOLOGY BETWEEN SOROCABA, CAMPINAS AND SÃO JOSÉ DOS CAMPOS

The Perimetrical Development Vector of the São Paulo Macrometropolis comprises a perimetrical arch around the Metropolitan Region of São Paulo, following the roadways connecting the regions of Sorocaba, Campinas, São José dos Campos and São Sebastião. According to the São Paulo Macrometropolis Action Plan, this vector is shown to have the greatest potential for attracting economic investments, especially in the high technology sectors, thereby "helping to support the diffusion of technological innovation and knowledge generation, systemic competitiveness of the regional economy and the power to attract investment":

> The nature of the production of these segments - high value added and high/medium technology intensity - requires agile import and export flows, which will be guaranteed by the connection with the port of São Sebastião and Viracopos airport. The structuring of this "arch" will result in the configuration of a new vector - now perimetrical - of development in the territory of the SPMM. (EMPLASA, 2015a, p. 23)

It is evident that the infrastructures for territorial circulation are the main elements that have placed the PDV at the forefront of macro-metropolitan economic-territorial planning. Both the Viracopos International Airport (the country's main cargo airport) and the port of São Sebastião (projected to show a three-fold growth in built-up area and eight-fold in operating capacity) are seen as the airport and port

with the highest growth potential in transporting merchandise; interconnected by an advanced road infrastructure, they are quickly connected to the country's main productive markets and consumers.



Map 3: The Perimetrical Development Vector of the São Paulo Macrometropolis. Source: Emplasa, 2015. Legend: RM: Metropolitan Region - AU: Urban Agglomeration - MR: Micro Region

This directive is in response to the saturation of the state's current main export axis, along the Anhanguera/Bandeirantes and Imigrantes/Anchieta highway systems between Campinas, the Metropolitan Region of São Paulo and the port of Santos. The flow of this territorial axis between Campinas and Santos has been increasingly compromised by factors such as urban occupation along the edges of the highways, enhanced competition for passenger transport - especially during holiday periods and bank holidays - with cargo transport and few possibilities of expanding and adapting the port of Santos to more modern technologies of merchandise transfer and docking of ships, which often causes long lines of trucks waiting to unload during harvest times, as in the case of the soybean.

This signifies that the constitution of the PDV as an integrated axis of territorial planning corresponds to the need to create an alternative to the current logistics of the state - hence the importance of creating a productive-logistic vector that does not pass through Greater São Paulo. This contrasts with the historical territorial expansion of São Paulo, characterized by the formation of interregional development axes that moved out from the capital towards the interior, as in the case of the Bandeirantes

development vectors between São Paulo and Campinas and Vale do Paraíba. It is recognized, therefore, that this is a

> [...] a new vector of economic development, set inside the SPMM, which, although it remains anchored within the scope of the economy of the MRSP, becomes more and more important and establishes relatively autonomous interfaces of development amongst the regions to which it is connected. (EMPLASA, 2015a, p. 25)

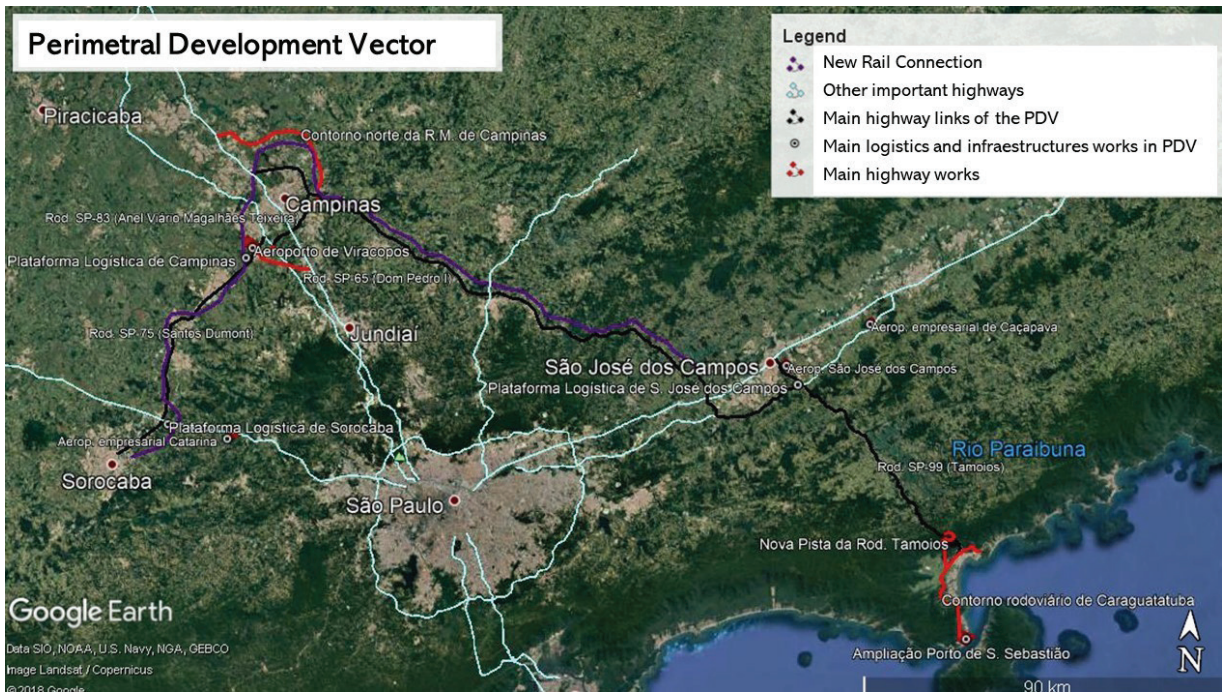
In the hypothesis that the São Paulo Macrometropolis is, as stated above, the main wager for the economic growth of the state, the Perimetrical Development Vector is most evidently the axis in which this territorial policy has been concretized. While the other planning vectors have focused on organizing urban occupation and previously consolidated territorial infrastructures, the PDV is the structuring axis of the "new" productive development, especially aimed at the new productive sectors of high technology and logistics.

Plans for the formation of this vector are even clearer, with the amount of state investments channeled into the perimetrical arch, such as the expansion of the Campinas Ring Road, the duplication of the Tamoios Highway (the duplication of the plateau stretch was finished in 2014 and the sierra is under construction, with a cost of approximately R$ 3.0 billion) and the constant investment in expanding the port of São Sebastião. If, during the second half of the twentieth century, the territorial vector formed by the Anchieta/Imigrantes and Anhanguera/Bandeirantes Highways - between the port of Santos, São Paulo and Campinas towards the "São Paulo Dorsal"[5] - was the main axis of public investment and of economic development, so the territorial arch between Sorocaba, Campinas, São José dos Campos and São Sebastião may also be declared as such at the beginning of the twenty-first century.

5 Term coined by Hervé Théry to designate the main axis of the state's economic development, structured by the nodal points of Santos, São Paulo, Campinas, Limeira, São Carlos/Araraquara, Ribeirão Preto, amongst others.

According to the São Paulo Macrometropolis Action Plans, there is a diversity of projects and works in the infrastructure of the Perimetrical Vector, drawn up by Emplasa (2015a). Amongst others, the most outstanding would be:

- **Port and airport infrastructure:** Modernization and expansion of the port of São Sebastião; Construction of a retroport on the plateau, to organize the containerized cargo towards the port of São Sebastião; Continuation of the current expansion of Viracopos Airport; Construction of multimodal logistics platforms in São José dos Campos (dry port, highway, railroad and airport), Campinas (highway, railroad and airport) and Sorocaba (highway and railroad).
- **Road and rail infrastructure:** Completion of the duplication of the Tamoios Highway, linking São José dos Campos to São Sebastião; Construction of the Caraguatatuba contour, which will provide a direct connection between the Tamoios Highway and the port of São Sebastião; Construction of the northern highway contour of the Metropolitan Region of Campinas, connecting the Dom Pedro Highway to the Anhanguera and Bandeirantes Highways; Duplication of the SP-304 highway, which gives direct access to Viracopos Airport; Construction of regional passenger rail services between the capital, Campinas and Sorocaba, as well as the High Speed Train between Campinas, São Paulo and Vale do Paraíba (to Rio de Janeiro); Construction of a new rail link for cargo transportation between Sorocaba, Campinas and Vale do Paraíba.



Map 4: Locations of the main infrastructure Works in the Perimetrical Development Vector. Produced by the author, 2018.

It is not unusual, due to the conditions of an economy as yet under development, that in Brazil, many of these projects may be extended for a longer period of time or execution. In this case, we highlight the duplication currently under construction of the Serra do Mar section along the Tamoios Highway, which involves a huge amount of investment (R$ 2.8 billion in a series of tunnels, similar to that constructed along the Imigrantes Highway, which is expected to be completed by the year 2020), and will increase the amount of flow towards the port of São Sebastião (SÃO PAULO (ESTADO), 2017). Likewise, the expansion work on the port of São Sebastião is at an advanced stage (currently awaiting environmental concessions to begin construction) and Viracopos airport has already completed its first phase of expansion.

The construction of this set of infrastructural works tends to further expand the productive structure of the vector. As demonstrated in the Table below, despite representing only 11% of the total population of the state, the metropolitan regions of Campinas, Sorocaba and Vale do Paraíba and Litoral Norte (the three main regions that make up the PDV), the economic figures they present are extremely expressive.

The productive sectors of major innovation are the most outstanding. The value added tax of the "Office Machines and Electronic IT Material Equipment" sector of the three metropolitan regions represents more than 46% of the total of the State of São Paulo, while the proportion of VAT on "Communications Equipment" is even larger, almost one third of the total state. Such preponderance in the most modern productive sectors is also reflected in the high index of imports, since these productive sectors require more importation of specialized raw material, representing, therefore, 42.62% of the total values imported in the State. Since the 1990s, there has been a linear concentration of companies related to high technology products and production methods, which has caused the vector between Campinas and Sorocaba to be commonly termed the "Asian

corridor" (LEITE, 2013). According to a survey conducted by the author for the thesis that has provided the basis for this research (PROENÇA, 2019), just between Sorocaba and Campinas, 29 production plants or logistic centers of multinational companies have been installed since 1990, specifically Toyota (with production plants in Indaiatuba and Sorocaba), Lenovo (initially in Sorocaba, in 2016 transferred to Indaiatuba) and John Deere (with a production plant in Indaiatuba and logistic center in Campinas), due to the size of the deployment and the number of workers employed.

Location	Population	Total DGP	Industrial VAT	Value of exports	Value of imports	VAT – Office & IT equipment	VAT – Electronic & communications equipment
M.R. of Campinas	3,021,313	173,002	45,766	3,854,670	12,015,869	1,049,966	3,740,950
M.R. of Sorocaba	1,826,376	88,938	20,385	2,033,961	3,610,523	925,911	500,121
M.R. of Vale do Paraíba & Litoral Norte	2,425,293	102,603	35,888	8,768,400	11,586,045	1,058,961	413,363
Total of the State of São Paulo	43,046,555	1,939,890	356,649	51,699,458	63,841,322	6,593,290	7,287,073
Participation of the 3 MRs in the state total	**11.80%**	**18.70%**	**28.61%**	**28.63%**	**42.62%**	**46.02%**	**63.87%**

Table 1: Proportional ratio between population and economic data of the three metropolitan regions that make up the Perimetrical Development Vector and Total of the State of São Paulo (SEADE, 2018).

* All economic data expressed in thousands of Real.

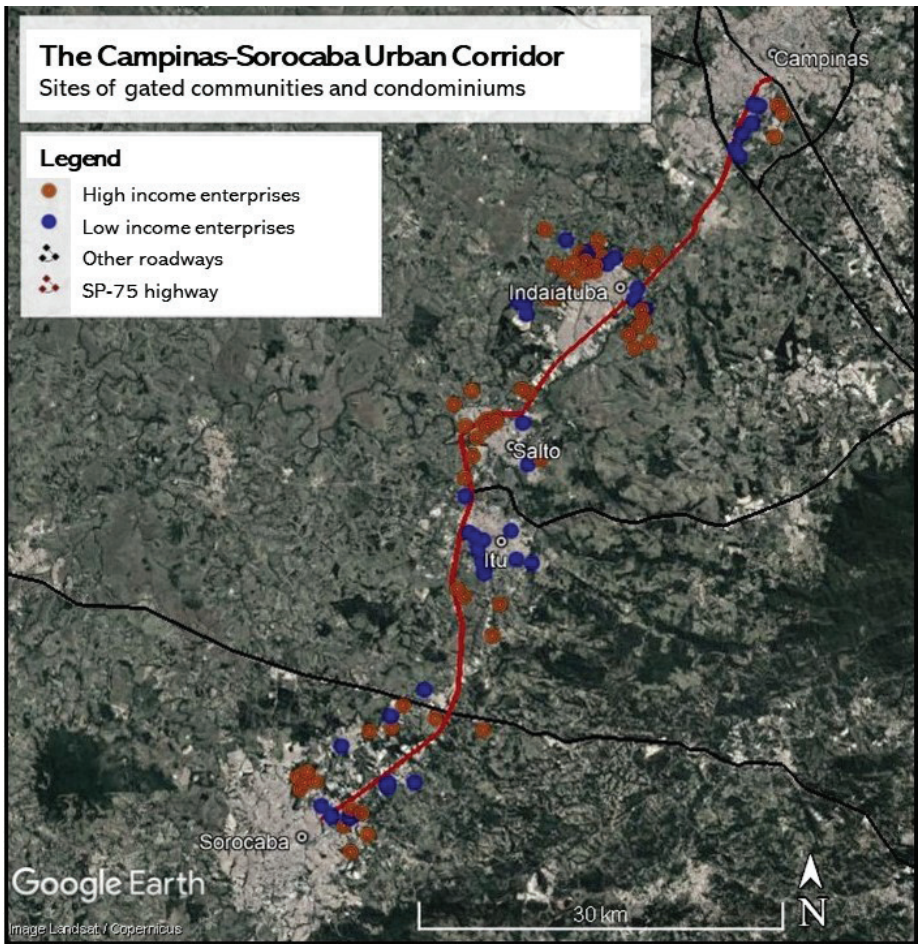
** 2015 Data for the Gross Domestic Product, Value Added Tax of the Industries and Values of exports and imports.

** 2017 Data for Population, VAT of office and IT equipment and VAT of electronic and communication equipment.

The consolidation of a productive corridor also becomes evident from the high urban and population growth rates in these regions, especially along the SP-75 Highway, between Campinas and Sorocaba, where there are more favorable topographic conditions for urban expansion than the rest of the PDV. Between 2001 and 2014, there was a growth of approximately 90km² of urban area along this roadway axis, which represents an almost 50% growth in relation to the total of the urban fabric that existed until then in the municipalities that were crossed by this highway - Itu, Salto, Indaiatuba and parts of Campinas and Sorocaba -, while the demographic increase in the same period was only 34.6%. These indicators reiterate the current trend towards urban expansion through fragmented, socially segregating typologies, such as condominiums, gated communities and shopping malls, typologies of low-density housing and constructions, which especially meet the market demands in a context where there is a major attraction for skilled labor.

These characteristics also reinforce tendencies towards the growth of dispersed, fragmented urbanization, to be encountered, even more, in the contexts of establishing "technopoles" (ASCHER, 2010). On a smaller scale, this phenomenon is more similar to the formation of a "mosaic" of small urban nuclei enclosed within their own walls, segmented away from the rest of the urban fabric, directly related to the regional/ macro-metropolitan space through direct access to the interregional roadway system.

On a larger scale, it leads to the formation of an almost uninterrupted corridor of urbanization, due to the conurbation between urban fragments. This is, therefore, the predominant form of urbanization associated with the formation of economic development vectors, in which the new productive/logistic typologies together with the residential and commercial typologies that follow them, are located, as a priority, along the highways, attracted by the multiple possibilities of circulation and access to the Macrometropolis space as a whole.



Map 5: Location of land divisions and gated communities between Campinas and Sorocaba implanted since 2002. Produced by the author from an interpretation of Google Earth/Landsat satellite images, 2018.

In this context, gated communities and residential land divisions are architectural and urban typologies, with emphasis on urban expansion, especially on the axis between Sorocaba and Campinas, as presented in Map 5, where urban growth has become more intense. This typology is predominant both in the middle- and upper-income brackets, driven by real estate stocks, and for the lower-income market, related to the recent implementation of popular housing programs, especially *Minha Casa Minha Vida* (My Home, My Life) Program.

From the expansion of gated communities and residential land divisions, a linear conurbation has formed between both cities. These dynamics of urban expansion differ substantially from the traditional formation of the main national metropoles

throughout the twentieth century - when the pattern of regional development around the regional poles was still present -, forming a spatially fragmented, dispersed linear urban-regional phenomenon, formed by the succession of tight urban typologies per se. Within this scenario, the highway is the element that in fact interconnects the new macro-metropolitan phenomenon.

Such dispersive movements of urban expansion tend to accentuate the socio-spatial inequalities in this vector. Areas previously considered peripheral, from the viewpoint of traditional urbanization, have become one of the main products for actions by the land and real estate markets, attracted by the inter-regional circulation capacity of the highways.

For example, with the consolidation of the Perimetrical Development Vector, land at the junction of the SP-75 Highway with the Viracopos International Airport, which was traditionally the poorest periphery of Campinas, and where today stands a group of favelas, has become coveted by a number of companies (such as John Deere and Valeo Automotive Systems, which have settled in the vicinity over recent years). Thus, a research pathway has been indicated in order to study of the fresh disputes amongst the agents of the production of urban space for urban-regional territory, which have been intensified by the planning of major interregional vectors of economic expansion.

FINAL REFLECTIONS

The indicators presented in this article reveal that, contrary to common sense, as of the turn of the century, industry lost none of its weight in the economic development of the regions. What may be confirmed is a change in the dominant industrial profile, with clear orientation for investments that benefit the productive sectors of high technology, in order to adjust to the demands of competitiveness demanded by the international division of Toyotist labor. Whilst the more traditional sectors of industry, such as metallurgy, have seen a remarkable decline in the value of commodities produced over the last two decades, the most modern in this vector have grown steadily.

Likewise, the trend towards the formation of a corridor for the production and flow of goods, focused on the most modern sectors of industry, corresponds to the restructuring theories of the productive chain, which have affirmed the inclination for a new re-concentration of the productive structures after the deconcentration, which has marked the global economy since the 1970s. Thus, the apparent fragmentation - on a major scale - of the productive chain and - to a lesser extent - of urbanization actually responds to a new concentration, this time no longer linked to a specific territorial point, but rather to regional linear vectors that simultaneously bring together the best conditions for productivity and territorial fluidity (BENKO, 1999).

From this, state territorial planning has come to recognize the potentiality of the Perimetrical Development Vector. At the same time, this territorial axis has interconnected regions of historical importance in the process of industrial deconcentration over the last century, having brought together important industrial parks in the period, and other regions that have noteworthy centers of research and production of knowledge, such as Unicamp, the CPqD (Centro de Pesquisa e

Desenvolvimento em Telecomunicações), the Laboratório de Luz Síncroton, CIATEC (Companhia de Desenvolvimento do Polo de Alta Tecnologia de Campinas), the Parque Tecnológico de São José dos Campos, amongst others. Furthermore, and more importantly, it has one of the most advanced intermodal circulation structures in the country (airport, highways, port and, under planning, railways).

Understanding the nature of this process is, therefore, a challenge that has only been voiced within this text, by evidencing the tendency to form a productive, urban re-concentration that must change the historical regional organization of São Paulo. The conformation of an axis of technological production along the Perimetrical Development Vector has a tendency to widen the economic and social distances between the regions of the State. Thus, the current problem of productive re-concentration is encountered in the almost exclusive attention of the state planning agencies towards the regions that historically have concentrated investments in the state, as opposed to the traditionally neglected regions of this process (most notably, Ribeira Valley, Southwest Paulista and Pontal do Paranapanema). This has led to an increase in the historical regional inequalities of the State of São Paulo.

This change in the pattern of territorial planning with the structuring of the development vectors tends to further prioritize the implementation of public investment policies in the vectors, as in the case of PDV, with a major installed potential to attract the interests of the advanced industrial and technological sectors and the selective commerce directed towards the higher-income brackets, thereby reinforcing the demographic growth and the expansion of urbanization along its main linking roadway axes.

These dynamics are not exclusive to contemporary times, since in all the modernization phases of the territory an increase may be observed in the differences between one region and another, to the extent that this is not something with a negative connotation per se. Indeed, the most modern sectors of industry require even more specific support conditions in relation to transport and communication infrastructures and to the concentration of skilled labor, the provision of services, a certain business climate, amongst others. The contemporary urban dimension itself is related both to the new forms of material occupation of space and to the urban way of life increasingly linked to the macro-metropolitan and regional scales. This may lead to a major differentiation between places, but without necessarily signifying the automatic increase of inequalities between them, since competition and collaboration between the economic agents and the production of places inherent in the capitalist system are the fruits of political, social and economic processes that form space and society (LENCIONI, 2015).

In the same manner, the concept of an axis with a concentration of high technology tends to hide its own inequalities and the internal social problematics of the regions linked by the PDV. As is common in the case of urbanization in countries with a tardy economic development, the growth of the most modern economic activities occurs pari passu to the extreme conditions of poverty of part of the population, if not due to their aggravation. An iconic example of this phenomenon in the PDV is the group of residential neighborhoods of extreme social deprivation and basic urban infrastructure next to Viracopos International Airport - one of the main symbols of the modernization of the vector - which are never mentioned as being targets for improvement, when dealing with the expansion works of the airport or the construction of new road and rail access to the airport terminals.

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