

Evidence of the metropolization of space in the 21st Century: elements for the identification and delimitation of the phenomenon

Evidências da metropolização do espaço no século XXI: elementos para identificação e delimitação do fenômeno

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Abstract

The identification and delimitation of the process of metropolization of space has been a challenge for urban researchers, mainly because of its underlying elements. This paper presents a theoretical and methodological proposal for identifying and delimiting metropolization based on the analysis of the spatial location of industrial and logistic plants, the general conditions of production, work commuting, and migration. Using the urban process of the State of Espírito Santo as a case study, we verify the expansion of metropolization to the non-metropolitan municipalities of Aracruz, Linhares and São Mateus, showing that the elements used for the analysis were relevant to the identification and delimitation of the process of space metropolization.

Keywords: metropolization; industry; general conditions of production; migration; commuting.

Resumo

Identificar e delimitar o processo de metropolização do espaço têm se constituído como um grande desafio aos estudiosos do urbano, principalmente pelos elementos subjacentes que o constituem. Este artigo apresenta uma proposta teórico-metodológica para identificar e delimitar a metropolização a partir da análise da localização espacial das plantas industriais e logísticas, das condições gerais de produção, da mobilidade pendular para trabalho e da migração. Utilizando-se do processo urbano do Espírito Santo como estudo de caso, foi possível verificar a expansão da metropolização para os municípios não metropolitanos de Aracruz, Linhares e São Mateus, de modo que os elementos utilizados para a análise se mostraram pertinentes para a identificação e a delimitação da metropolização do espaço.

Palavras-chave: metropolização; indústria, condições gerais de produção; migração; mobilidade pendular.



Introduction

Urban, economic and regional studies are pointing to a series of new spatial features resulting from the re-structuring of capital. New forms of productive organization, redefinitions in the territorial division of work and on migration and commuting mean new forms of production and organization of space, particularly urban space.

This shifting scenario brings up the concept of metropolization of space, which includes the idea of spatial expansion of the urban phenomenon while also delimiting this type of urban growth as intensive and as a development that concentrates techniques and resources. Generally speaking, metropolization is a socio-spatial process that metamorphizes the territory and imprints metropolitan characteristics onto space, transforming pre-existing structures and engendering new urban morphologies (Ascher, 1998; Lencioni, 2003). It implies the formation of a kind of urban order that goes beyond the limits of the metropolis, making up urban spaces that are materially discontinuous yet integrated through an intensive flow of people, goods, capital, information, etc. (Lencioni, 2003).

One of the major challenges posed to researchers of the urban phenomenon is that of capturing the materialization and dimension of this process in space, given that many of the elements are subjacent to what is effectively shown. In this context, this paper aims at identifying the process of metropolization by looking at (1) the spatial organization of production; (2) the distribution of general conditions of production; (3) work commuting; and (4) migration, analyzing the pertinence

of those variables for this delimitation. To this end, the Metropolitan Region of Greater Vitória (hereby *RMGV – Região Metropolitana da Grande Vitória*) is adopted as a case study, so as to offer an application of the proposals upon a real, timely context. The primary hypothesis is that the reason why present transformations in the spatial organization of production, density of general production conditions, migratory flow, and work commuting do not unfold homogeneously through space is tied to the logic of capital itself, geared toward the production of space through metropolization, in lieu of being defined by law or state planning. In the case of the State of Espírito Santo, other papers (Zanotelli et al., 2014, for instance) have already pointed to the formation of an extended metropolitan area, but they offered few concrete and methodological elements to confirm this thesis.

Methodologically, this paper is organized through a review of bibliography on the production and organization of urban space, on the process of metropolization of space, and on migration and its dynamics. A research was undertaken using the regional Social Communication Program of the basin (Petrobras, 2019), the Espírito Santo Federation of Industries (Findes, 2018), and newspaper articles, in order to survey the major existing and projected industrial and logistic plants in the State of Espírito Santo. In addition to that, data was sourced from the Demographic Census of 2000 and 2010, of the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística – IBGE), about migration dynamics (place of residence five years before the census), commuting and the activity sectors that people were occupying in Espírito

Santo. Other databases from the Jones dos Santos Neves Institute (IJSN, 2015), Energias de Portugal (EDP, 2017), the Espírito Santo Bankers Union (2017), and Telebrás (2017) were used for surveys about the set of elements that constitute general production conditions (roads, railways, ports, phone signal antennas, bank agencies, gas pipelines, airports, etc.). The data were used to build an indicator of density of those conditions by municipality, allowing for a spatial analysis of the outline, the limits and the dynamics of the recent metropolization process in Espírito Santo.

Contemporary urban process

Soja (2002), Lencioni (2003) and Moura (2009), among others, point out that we are inserted in a new context understood as the productive re-structuring of capital. This process is characterized by new means of production and organization of the space associated to the logic of financial capital. Production, broadly speaking, is reorganized in order to overcome the Fordist model through flexible organization. This movement, on one hand, imposes a series of social transformations started by the reorganization of the social and territorial division of labor, and, on the other hand, tends to transform spatial content through the reorganization of the very way of producing space, by which the urban scenario gains new morphologies, dimensions, and scales (Ascher, 1998).

There are, however, multiple possibilities of analysis of this new context, and we seek to understand it through the concept of metropolization of space, which is about

the apex of the urbanization process and conformed by a historical determination of contemporary society associated to the re-structuring of capital (Lencioni, 2003).

Generally speaking, metropolization is a socio-spatial process that engenders a metamorphosis of the territory. It imprints metropolitan characteristics onto space, transforming pre-existing structures, independently of whether those are metropolitan spaces or not,¹ fostering new urban morphologies with specific features (Lencioni, 2003; Ascher, 1998). This implies the conformation of a type of urban physiognomy that surpasses the limits of the metropolis, constituting spaces that are materially discontinuous but integrated by an intensive flow of people, goods, capital, and information (Leroy, 2000; Ascher, 1998; Lencioni, 2003).

Metropolization has been the object of study of several researchers and fields of research, usually driven to understand the relationships between globalization, productive re-structuring, and the urban process. In the attempt to interpret those relationships/processes, some concepts regarding the contemporary urban morphology are being put forward, such as metapolis (Ascher, 1998), post-metropolis and exopolis (Soja, 2002), global city-region (Scott et al., 2001), megalopolis (Gottman, 1970), informational city (Castells, 1999), urbanization and dispersed cities (Monclús, 1998), mega-region (Lencioni, 2015) and regional urban arrangements (Moura, 2009).

In spite of the several studies and relevant progress being made, there is one dimension that is under discussed: the account of the materialization, delimitation and dimension of this process in space. Some

proposals were put forward, such as that by Lencioni (2003), analyzing the reality of the urban process of São Paulo, which proposes the analysis of two important aspects that are dialectically related: the vertical disintegration of industry and general conditions of production. The first one points to the fact that distinct phases of a certain production process do not mandatorily need to be integrated into just one productive unit. The industry expands its activities to several units held together by the management of capital, the element that will ensure integration in the territorial dispersion of the units. In addition to that, it is pointed out that the movement of vertical disintegration can also take place when the industry outsources part of its production process, while still controlling the valuing cycles of the capital in its sector.

As for the general conditions of production, they correspond to the conditions that articulate the production specific of traditional accumulation mindsets. They have to do with the conditions that make possible not just a capital per se, but a set of capitals. Those conditions can be grouped into two categories, direct and indirect. The conditions of direct connection can be exemplified by highways, railways, ducts, ports, airports, telecommunication, power grids, banks, and others. The conditions of indirect connection are schools, hospitals, sports complexes, cultural and leisure centers, among others (Lencioni, 2007).

The distribution of those conditions in space is not homogeneous, and tends to concentrate in certain areas, especially in the urban space and its immediate surroundings. The general conditions of production, especially those with direct connection to the

production and circulation of capital, need urbanization, because the agglomeration paves the way to a swifter reduction of the time of production and circulation, and the centralization of capital (Smith, 1988). In this sense, what we have is a double movement by which the conditions, while tending to concentrate in the surroundings of urban areas (intensification), also enable the expansion of this space (extensification).

The logic of distribution of those conditions itself works as an element that enables and limits, at once, the vertical disintegration of industry or simply industrial dispersion.

Thus, the idea of de-territorialization of industry, expressing a radical freedom of place for industrial capital, must be put in the right terms. This idea of territorial freedom originates from the perception that industry location is no longer as dependent of sources of natural resources and raw materials as it was in the past. However, that is looking at freedom with the eyes of the past. The transportation revolution has, indeed, allowed for this uprooting of the industry from the old industrial production scenario, but the eyes of the present must see clearly the emergence of other general conditions of production that are largely *densified in the metropolis and its immediate surroundings, which territorialize the industry that is characteristic of this new moment.* (Lencioni, 2003a, pp. 4 and 5; our emphasis)

Another proposal for the delimitation of the contemporary urban process is pointed out by Moura (2009). Based on the reality of the Brazilian process of urbanization in

the context of globalization, she considered aspects such as population size, economy scale (gross internal product, “PIB” in Brazil), intensity of commuting, among others. From an analysis of local spatial self-correlation, Moura (ibid.) managed to delimit what she called Regional and Urban Arrangements (*Arranjos Urbanos e Regionais – AUR*), corresponding to the materialization of the process of metropolization in Brazil.

In his turn, Smith (1988), discussing the role of the urban scale in the process of conformation of uneven and combined development, in the context of the production of space subordinated to capitalism, points out that:

If the urban scale as such is the necessary expression of the centralization of productive capital, the geographical limits to the urban scale (not to be confused with the administrative boundaries of a city) are primarily determined by the local labor market and the limits to the daily commute. (p. 197; our emphasis)

In summary, Lencioni (2003), Moura (2009) and Smith (1988) put forward proposals for the delimitation of the urban process. They are seen, individually, as unable to satisfactorily account for the many urban realities in Brazil, especially metropolization. As for the proposal espoused by Lencioni (2003), it bears stressing that it applies to the reality of the state of São Paulo, where a specific process of productive organization of industry unfolds, which is not comparable to the reality of other regions. The state of Espírito Santo is an example, since many industrial plants are subordinated to the management located

in Rio de Janeiro or São Paulo; in addition to that, the process of vertical disintegration is not common in its industries. Besides, the criteria proposed by Moura (2009) do not go as far as giving an account of the urban process of many places and regions, such as the Metropolitan Region of Greater Vitória, which did not develop as an AUR. The fact that it does not fit the categorization proposed by Moura (ibid.), however, does not mean that the urban process in Espírito Santo is inert or at the margins of the dynamics of present-day capitalism, as shown by Zanotelli et al. (2019). Finally, the proposal offered by Smith (1988) does not reveal important processes that go dialectically in tandem with the social division of work in the urban space, as looking at commuting only physically² undercuts the complexity of modern urban areas and their developing activities.

The limitations laid out do not invalidate or diminish the importance of those contributions. Besides, the fact that they are not antagonizing opens up new possibilities of analysis through the association of the three views and addition of new elements. This association, which is what this paper proposes, allows us to consider the expansion of the present urban process from the standpoint of (1) distribution of the general conditions of production and (2) the spatial organization of production of industrial activities proposed by Lencioni (2007), of (3) commuting, as proposed by Smith (1998) and Moura (2009), and, we will add, of (4) migration dynamics, whose occurrence is strongly related to metropolitan expansion (Cunha, 1994), as well as of the dynamics of production of space (Dota, 2015; Cunha, 2016).

What is the potential of including migration dynamics as an element of analysis for the delimitation of the process of metropolization of space? Indeed, the relationship between urbanization and migration is not new in Brazil. The major urban clusters of Brazil were propelled by rural-urban migration (Singer, 1976), as the industrialization process turned them into hubs or areas of attraction that emerged because of economic transformations in the country, receiving massive migration flows and concentrating human contingents.

The reception of those flows, which predominated up until the 1970s, allowed for rapid expansion volume-wise, while also being intimately related to transformations in the internal morphology of those areas. As Cunha (1994; 2018) has shown quite well, for the Metropolitan Region (RM) of São Paulo, the intra-metropolitan migration dynamic of the flows expanded clustering toward the peripheries and created new relationships between those areas and the center. This expansion did not occur randomly, but always strongly related to the process of production of the urban space. This understanding was confirmed by Matos (2005) amid the debate about the role of population flow in major cities; by Dota (2015) and Cunha (2016) for the RM of Campinas; in addition to the extensive analysis already conducted regarding the major metropolitan regions of Brazil (see Cunha, 2018).

The new element beyond intra-metropolitan expansion consisted of the new flows observed originating from RMs, but with destinations outside of its borders (Cunha et al., 2013; Silva, Cunha e Ortega, 2017; Silva, 2018), indicating the expansion of

the metropolitan area or, with a qualitatively new character, the creation of new urban contexts that, in the case of São Paulo, are being called “macro-metropoles”. Similarly, changes observed in the commuting dynamics over the last decades, especially the relative and absolute increase in flow outside of RMs (Lobo and Cunha, 2019; Dota, 2019), reinforce this understanding, making evident the impossibility of use of political limits for the analysis of metropolitan processes and phenomena.

In summary, the analysis elaborated here seeks to connect four elements (general conditions of production, spatial distribution of industry, commuting, and migration) that, for the different influences involved in making them, can contribute to the identification of the dimension of the metropolitan process in different spaces and scales, that is, to identify the manifestation of the more intensive urban dynamic from the standpoint of the social, economic and spatial processes that are characteristic of this space.

The expansion and delimitation of the contemporary urban process in the State of Espírito Santo: a theoretical-methodological analysis

The urbanization of Espírito Santo and the conformation of the Metropolitan Region of Greater Vitória (RMGV),³ much like that of other cities and metropolitan regions, happened in an accelerated pace because

of the industrialization process, which triggered an urbanization that surpassed it (Oliveira, 1982). Urbanization in Espírito Santo, especially in the surroundings of its capital city, was strongly correlated with the large investments that begun in 1942, in the municipality of Cariacica, with the installation of Companhia Ferro Aço de Vitória (Cofavi), a steel industry, now privatized and controlled by Mexican multinational Simec. In 1941, the first facilities of mining company Vale do Rio Doce (CVRD) were installed in the municipalities of Cariacica and Vila Velha. Later on, in the 1970s, there was the implementation of the so-called large industrial projects of Espírito Santo, notably the construction of the Tubarão hub, formed by CVRD (present-day Vale) as well as Companhia Siderúrgica de Tubarão (CST – Tubarão Steel Company, present-day Arcelor Mittal), and the support of the ports of Tubarão and Praia Mole. In the municipality of Anchieta, to the south of the RMGV, mining company Samarco and the Ubu port were installed; and, in the municipality of Aracruz, to the north of the RMGV, Aracruz Celulose, present-day Suzano, and the port of Barra do Riacho (Portocel) were installed. In addition to that, in the State jurisdiction, there was, in 1974, the implementation of Centro Industrial da Grande Vitória I and II (Greater Vitória Industrial Center – Civit I and II) in the municipality of Serra.

Those major industrial plants have contributed to the transformation of the socio-spatial content of the state of Espírito Santo. They were the reason why the state changed its profile from an agricultural export economy into an urban-industrial area. More concretely, the effects upon urbanization can be verified basically through two indicators:

one, the evolution of the urban population, especially in what would later be called RMGV; and two, the expansion of the urban sprawl of the RMGV (Dota e Ferreira, 2019).

More recently, the urban process in the state became more dynamic, featuring new transformations, chiefly new forms of production of urban space by means of gated communities and a growing number of shopping malls in the metropolitan region. Between 2005 and 2013 alone, 68,681 residential units in gated communities were opened in the RMGV. In the same period, seven large subdivisions were launched with a total of 4,309 plots of land (Ferreira, 2014). Added to that, around nine industrial and logistic complexes were opened in the region, as well as five shopping malls. Generally, those enterprises brought dynamism and conflicts to the region, as they result, in a way, from the capture and appropriation of land and real estate income, and have engendered new processes of redefinition of the use of urban lands, reorganization of the territorial division of labor, and the conformation and intensification of new forms of segregation.

Unlike other places, the expansion of the urban process beyond the delimited metropolitan region was officially started by the major investments in the municipalities in the metropolitan surroundings. The most recent projects follow the same process, with many concentrating outside of the RMGV, especially in the state coastal line, chiefly the municipalities of Aracruz e Linhares and São Mateus, as indicated on Box 1.

Considering the relevance for the economic dynamics of the state, those industrial and logistic plants represent an interiorization of productive activities, as they

Box 1 – Major industrial and logistic plants finished and planned in the State of Espírito Santo after 2005

Major project	Stage	Companies in charge	Location	Management office
Porto Central	Planning	TPK Logística, Polimix, Porto de Roterdã and Van Oord	Presidente Kennedy	Vitória-ES
Itaoca Offshore	Planning	Itaoca Offshore	Marataizes	Vitória-ES
Porto de Gamboa	Planning	Edison Chouest	Itapemirim	Rio de Janeiro
UTG-SUL	Finished (opened in 2010)	Petrobras	Anchieta	Vitória-ES and Rio de Janeiro
UTG-Cacimbas	Finished (opened in 2006)	Petrobras	Linhares	Vitória-ES and Rio de Janeiro
<i>Petrocity</i>	Planning	Petrocity Portos S.A	São Mateus	Vitória-ES and Rio de Janeiro
Terminal Norte Capixaba (TNC)	Finished (opened in 2006)	Petrobras	São Mateus	Vitória-ES and Rio de Janeiro
Estaleiro Jurong	Finished (opened in 2014)	SembCorp Marine (SCM)	Aracruz	Aracruz, Vitória-ES and Rio de Janeiro
Terminal Barra do Riacho (TBR)	Finished (opened in 2013)	Petrobras	Aracruz	Vitória-ES and Rio de Janeiro
Porto Imetame	Planning	Imetame	Aracruz	Aracruz
Terminal Portuário de Uso Múltiplo	Planning	Nutripetro	Aracruz	Aracruz and Vitória-ES
Fábrica de bio-óleo	Planning	Suzano	Aracruz	São Paulo
Mlog	Planning	Mlog	Linhares	Rio de Janeiro
Terminal São Mateus Liquiport	Planning	Odebrecht	São Mateus	Rio de Janeiro
Britania Eletrodomésticos	Manufacture of other equipment and electric devices	Britania Eletrodomésticos S/A	Linhares	Joinville-SC
Indústria encarçadora de ônibus	Finished (opened in 2014)	Marcopolo	São Mateus	Caxias do Sul-RS
Indústria de motores elétricos	Finished (opened in 2011)	Weg motores	Linhares	Jaraguá do Sul-SC
Indústria de bebidas	Finished (opened in 2002 and 2012), expanded in 2016 when Coca-Cola ceased operations in Cariacica	Leão alimentos (Coca Cola)	Linhares	São Paulo
Indústria de reboques e semirreboques	Finished em 2019	Randon S/A	Linhares	Caxias do Sul-RS
Termelétrica LGSA	Finished em 2008	Linhares Geração S/A	Linhares	Vitória-ES

Source: Petrobras (2019), Findes (2018) and corporate websites.

relativize the concentration demanded by the RMGV. This de-concentration, according to Rua (2015a), appears as a movement that is coherent with the present investment strategy of looking for places where competitive advantage is possible: they are locations outside of the metropolitan region, but relatively close to it, thanks to the general conditions of production. On Box 1, it is clear that the management of all enterprises, either finished or in the planning phase, is connected to the metropolitan dynamics of Vitória or even Rio de Janeiro and São Paulo.

Delimitation of general conditions of production in Espírito Santo

Looking to identify and delimit the distribution of general conditions of production in Espírito Santo, as well as how that relates to the

interiorization of production, an indicator of density of general conditions of production by municipality was created. With this aim, only infrastructure that is directly connected to the process of production in the municipal level was taken into account, namely: roads, railways, gas pipes, mining pipes, ports, airports, electricity lines, telephone antennas, and bank agencies. Values relative to the presence or absence of infrastructure in the municipalities were ascribed, at times considering type and intensity, as indicated on Box 2.

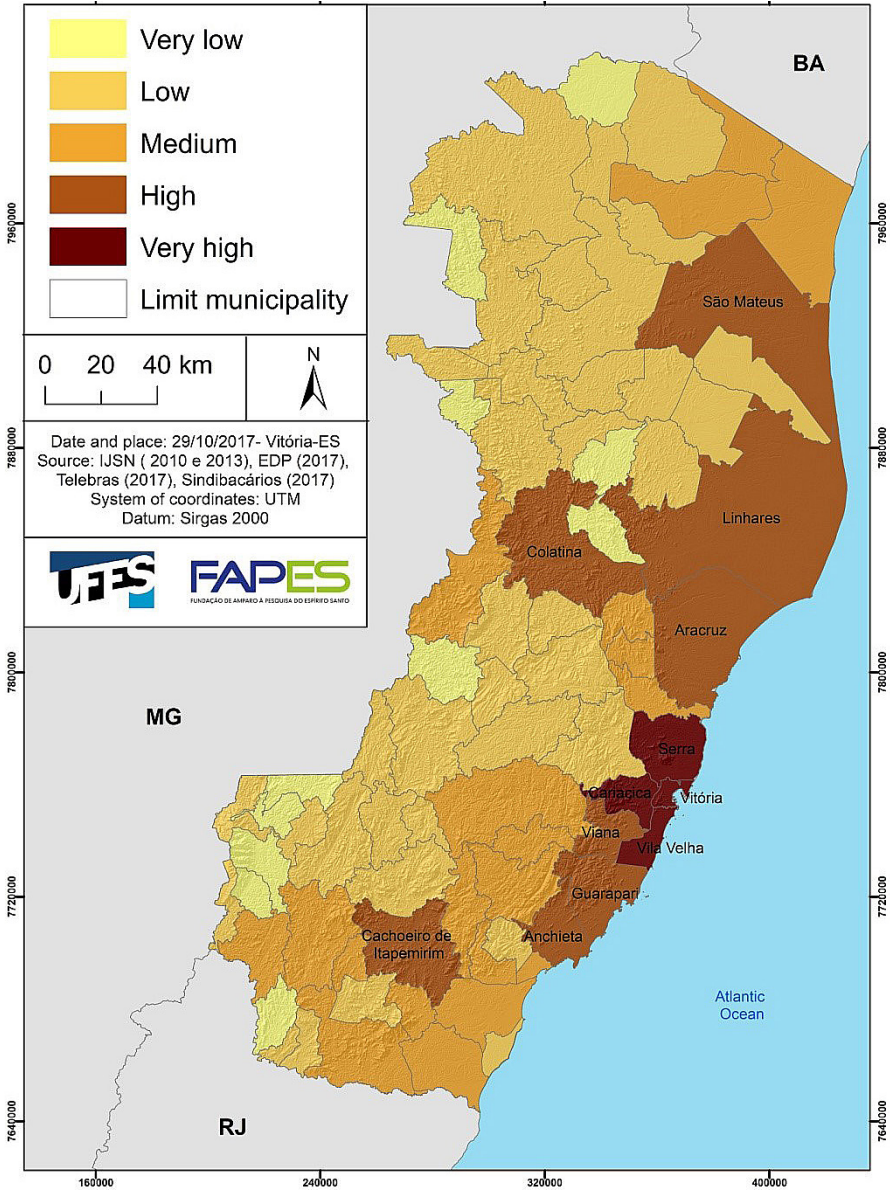
All the elements were analyzed for each of the 78 municipalities in Espírito Santo and, in the end, it was possible to measure the density of general conditions of production individually by adding the weights of the indicators of presence of infrastructure. The results were systematized into classes that range from very low density, with the presence of few infrastructure elements, up to very high density, that is, a greater concentration of infrastructure elements and,

Box 2 – Reference table to calculate the weights of general conditions of production in Espírito Santo by municipality (2017)

	Indicator of presence					
	0	1	2	3	4	5
Roads	only country roads	state highway	federal highway	–	–	–
Railway	none	present	–	–	–	–
Gas pipe	none	present	–	–	–	–
Mining pipe	none	present	–	–	–	–
Electricity lines	none	present	–	–	–	–
Port	none	present	–	–	–	–
Airport	none	present	–	–	–	–
Telephone antenna (quant.)	–	up to 25	26 to 50	51 to 100	over 100	–
Banks (agencies)	–	up to 5	6 to 15	16 to 30	31 to 50	51 to 100

Source: the authors, in 2019.

Map 1 – Density of the general conditions of production by municipality in the State of Espírito Santo (2017)



Source: IJSN (2010, 2013), EDP (2017), Telebras (2017), Sindibancários (2017).

in other words, greater presence of general conditions of production. Map 1 shows the spatial distribution of the general conditions of production in Espírito Santo according to their density per municipality.

It is noticeable that the municipalities with a higher density of general conditions of production are exactly the ones that comprised the RMGV conurbation area (Cariacica, Serra, Vila Velha and Vitória). Other high-density municipalities are in the north and south coastlines. To the south, there are Guarapari, which is part of the RMGV, and Anchieta. On the northern coast there are Aracruz, Linhares, and São Mateus. On the state hinterlands, there are Cachoeiro de Itapemirim in the southern portion and Colatina in the north. Historically, those municipalities stand out for their important productive activities (Cachoeiro, with marble and granite extraction and Colatina with their textile industry) and for being important urban centers in the state hinterland.

Overall, the general conditions of production are found in the metropolis and precisely in the municipalities that have been getting industrial and logistics plants, especially Aracruz, São Mateus and Linhares. This spatial distribution of general conditions of production makes it possible, thus, for those productive and logistical activities to shift to inland areas, without losing their relationship to the metropolis. Those movements enable an extension of the metropolitan process through space, as new material and immaterial exchanges that transpire in/from/toward the metropolis unfold through the territory, tethered to the centrality of the metropolis in the present context of reproduction of capital, and to the geographical diffusion of metropolitan values.

The unequal distribution of general conditions of production associated to the move inward of productive activities also brings about implications upon other processes, such as the territorial division of labor and migratory flows.

Territorial division of labor and populational flows

As for the territorial distribution of labor, IBGE data from between 1991 and 2010 indicate that the State of Espírito Santo presented a yearly average geometric growth rate of 4.0% of laborers in the industrial sector. This growth, however, was felt differently in portions of the territory. On the RMGV, the growth rate was of 2.7% and in the northern coast municipalities, it was even higher, as they are exactly the ones that received and are receiving investments toward industrial and logistic plants, and that have shown a high density of general conditions of production. Aracruz presented a 7.23% growth rate of workers in the industrial sector between 1991 and 2010; Linhares' was of 6.2%; and the São Mateus rate was of 5.89%. The other municipalities in Espírito Santo, in total, had a 5.0% growth rate. Details about growth rates can be visualized on Table 1.

It is important to stress that, although the highest rates of growth in industrial labor are outside of the RMGV, that does not mean de-industrialization, but rather the arise of new industrial areas in the State, especially in the municipalities of Aracruz, Linhares and São Mateus. In that sense, the process takes shape as a concentrated de-concentration of

Table 1 – Persons employed in industrial activities and yearly geometric growth average (% p.a.) in industrial labor. Selected samples, Espírito Santo, 1991-2010

RMGV and municipalities	1991	2000	2010	Rate of yearly average geometric growth (% a.a.)		
				1991-2000	2000-2010	1991-2010
RMGV	66,257	73,234	86,407	1.0	1.7	2.7
Aracruz	2,866	3,460	5,791	1.9	5.3	7.3
Linhares	5,634	7,629	10,306	3.1	3.1	6.2
São Mateus	2,602	3,460	4,607	2.9	2.9	5.9
Other municipalities	45,322	63,650	73,618	3.5	1.5	5.0
Total	122,681	151,433	180,729	2.1	1.8	4.0

Source: IBGE Demographic Census of 1991, 2000 and 2010.

industrial labor, as the metropolis continues to not just concentrate the largest number of workers in the sector, but also control and manage a large portion of the industrial activities outside of it, in addition to directing the metropolitan expansion toward the areas that it continues to control.

In its turn, the interiorization of productive activities associated to the unequal distribution of the general conditions of production also brought about transformations in the migratory flows of Espírito Santo, the analysis and description of which testify to the ongoing transformations. Dota, Coelho and Camargo (2017) point that the RMGV and the northern coast municipalities, especially Aracruz, Linhares and São Mateus, were the ones with the largest number of immigrants in the decade of 2000; a new fact that is uncovered in the same wind as the transformations in territorial division of labor

in the State of Espírito Santo. For its historically constructed central role, the top destination of immigrants in the state level remains the RMGV, presently followed by the municipalities of the Northern coast, especially Aracruz, Linhares and São Mateus (Table 2), with a substantial migration change, in the 2000s, in these municipalities (Dota, 2019), exactly as a result of the investments presented here.

According to Table 2 data, Aracruz (2.4% p.a.), São Mateus (1.9% p.a.) and Linhares (2.3% p.a.) were the municipalities that displayed a populational growth rate above the state average (1.3% p.a.) and RMGV average (1.6% p.a.), an important part of this result being due to migration. It also indicates an important increase in the number of immigrants in Aracruz (71.9%), Linhares (112.6%) and São Mateus (41.5%) between 2005-2010 in comparison with 1995-2000, as well as an increase in the ratio of immigrants

Table 2 – Populational growth and immigration in the RMGV, Aracruz, Linhares, São Mateus and other Espírito Santo municipalities between 2000 and 2010

RMGV and municipalities	Resident population		Average geometric rate of populational growth (% year)	Immigrants		Variation in volume (%)	Ratio of immigrants in resident population	
	2000	2010		2000-2010	1995-2000		2005-2010	1995-2000
RMGV	1,438,596	1,687,704	1.6	180,415	217,425	20.5	12.5	12.9
Aracruz	64,637	81,832	2.4	5,993	10,301	71.9	9.3	12.6
Linhares	112,617	141,306	2.3	8,033	17,082	112.6	7.1	12.1
São Mateus	90,460	109,028	1.9	10,793	15,272	41.5	11.9	14.0
Other municipalities	1,391,187	1,495,082	0.7	125,420	148,951	18.8	9.0	10.0
Total	3,097,497	3,514,952	1.3	330,654	409,031	23.7	10.7	11.6

Source: IBGE Demographic Census of 2000 and 2010.

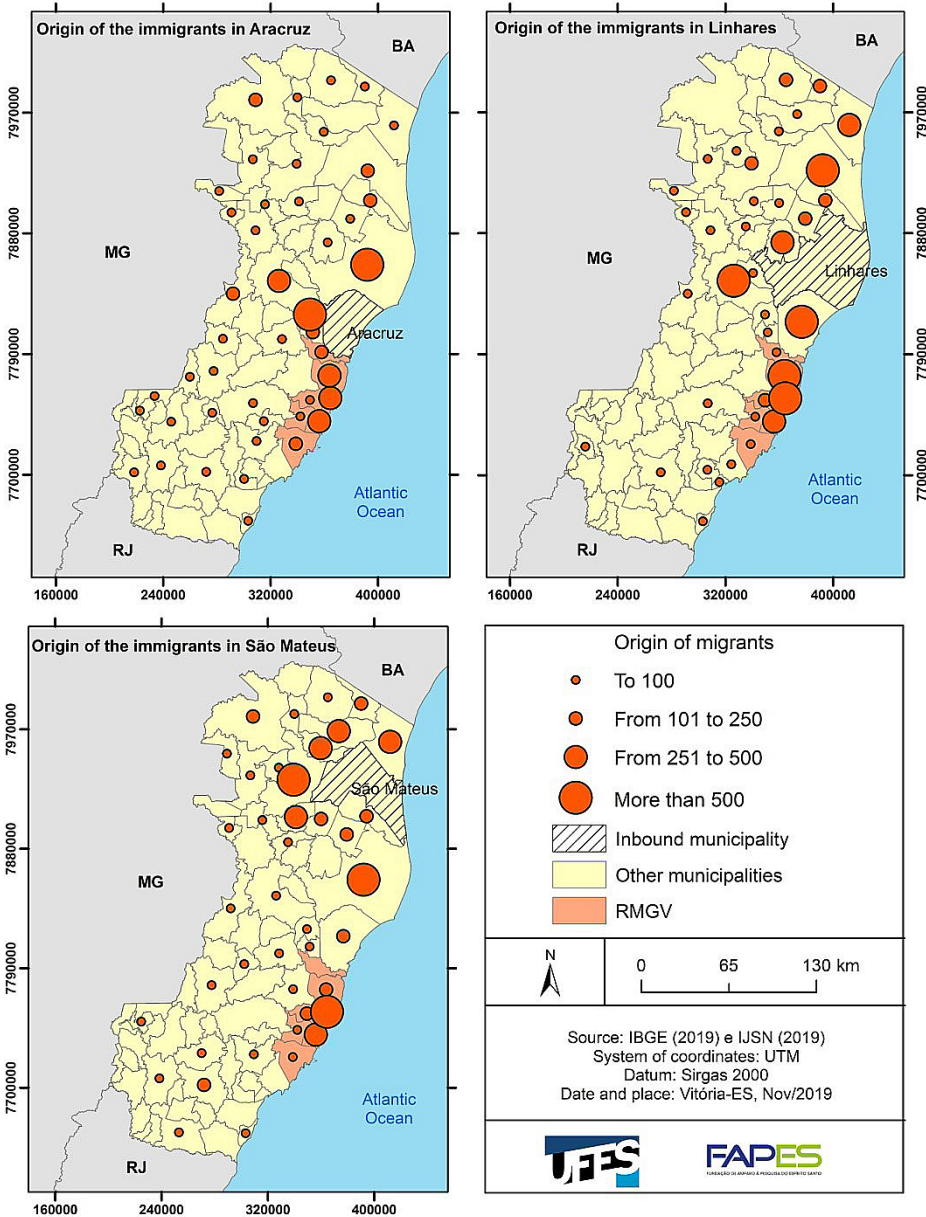
among the resident population. The table data, therefore, indicate that migratory flows in Espírito Santo follow, up to a certain point, a concentrated de-concentration, that is, RMGV continues (in absolute numbers) to concentrate a larger portion of the immigrants (54.6% between 1995-2000 and 53.2% between 2005-2010), however, there is a pronounced increase in immigrants in Aracruz, Linhares and São Mateus, which amounted to 7.5% of the total in the first time span analyzed and hit 10.4% in the second. More than the volume of immigration, the migratory balance reveals the transformations at hand: between 1995-2000, Aracruz (-322), Linhares (-4,801) and São Mateus (-3,517) displayed a negative migratory balance of 8.6 thousand people, while between 2005-2010 this balance was positive, at 10.1 thousand people.

With the shift in spatiality of the phenomenon, there are also new

configurations in terms of observed modalities. Where people previously migrated almost exclusively to the metropolis, now there is an important flow that corresponds to an outflux from it toward the hinterland. However, this does not apply for the hinterland as a whole, but mostly the municipalities with new and important industrial and logistic plants, with a high density of general conditions of production. This amounts to a process of *peripherization* of the population, no longer constrained to the metropolis, but extending toward its expansion area. Map 2 evidences this movement.

In Map 2, the local relevance of Aracruz, Linhares and São Mateus is evident, as they attract migratory flows from neighboring municipalities. More important, however, are the flows originating from the RMGV municipalities, clearly configuring this portion of the northern coastline of Espírito Santo

Map 2 – Origin of the immigrants in Aracruz, Linhares and São Mateus.
Espírito Santo, 2005-2010



as a metropolitan sprawl area. This confirms that, added to increased migration, there are direct outbound flows from the RMGV, with similarities to the intra-metropolitan expansion movements that had been observed until then. This new feature is related to the new spatial content resulting from the process of metropolization of space in the State of Espírito Santo.

The populational growth associated to migration flows, especially people who left the RMGV, resulted in dynamics that were previously restricted to the RMGV to expand toward Aracruz, Linhares and São Mateus. For instance, the kind of production of urban space associated to market real estate production, via gated communities, apartment complexes and housing subdivisions, brought its revenue strategies to these municipalities. Construction companies such as Lorenge⁴ and Cobra Engenharia⁵ launched residential and commercial developments in Linhares and Aracruz. There was also the construction of a major housing subdivision in Linhares, the Terras Alphaville Linhares, built by Alphaville Urbanismo, which belongs to the Pátria investment fund, connected to the American investment fund The Blackstone Group, present worldwide. Added to this, there is the expansion of several construction companies with local capital that started typologies of developments that were previously restricted to metropolises. That is the case of the company MV Participações, from Linhares, which started out in the agricultural business and later created the company Solidus for the civil construction segment.⁶

In addition to that, housing development companies that were previously present in the RMGV are now launching new developments in

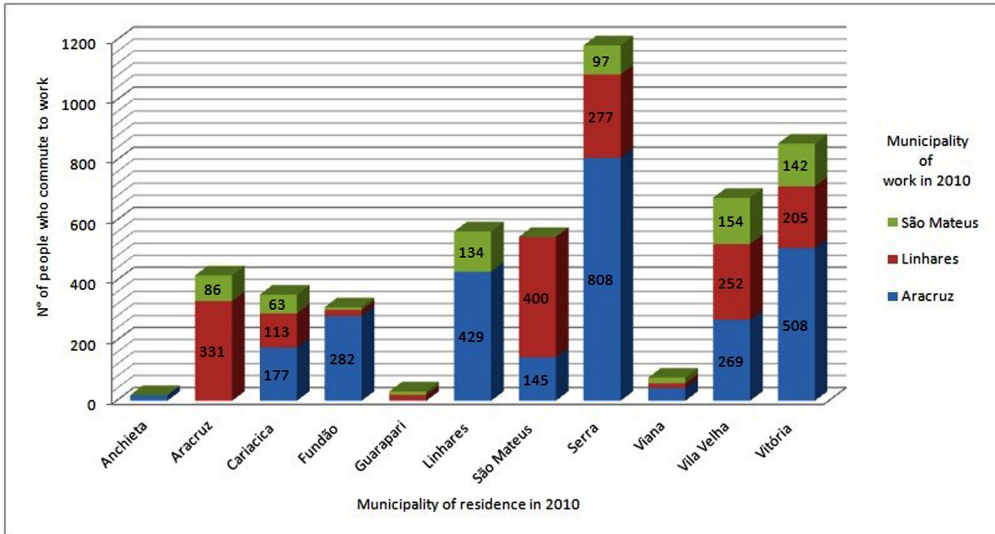
Aracruz, Linhares and São Mateus. Such is the case of Companhia Brasileira de Loteamentos (CBL) and Grupo Cap Empreendimentos Imobiliários, present in several medium cities and metropolitan regions in the southeast, south, midwest and northeast. Finally, logistic and industrial developments (there are two developments of this typology in Linhares – Ecopark and VTO Linhares) as well as shopping malls (Oriundi in Aracruz and PátioMix in Linhares) used to be exclusive products of the RMGV, and can now be observed in this area of metropolitan expansion.

Another element that helps identify the metropolitan expansion toward the municipalities in the northern coast of Espírito Santo is commuting. Analyzing Chart 1, we see substantial commuting between the municipalities of the RMGV and the three coastal municipalities of Aracruz, Linhares, and São Mateus. Out of the 2.6 thousand people that commuted to Aracruz among the municipalities analyzed in 2010, 79.9% were outbound from the RMGV, with 30.0% (808 people) from Serra. Out of the 1.6 thousand people that commuted to Linhares, 55.2% were outbound from the RMGV. As for São Mateus, out of 715 people, 69.2% were outbound from the RMGV.

Commuting to work is characterized by spatial scope, after all, there is, in Espírito Santo, the development of heavy long-distance commuting flows, outbound from the metropolis toward non-metropolitan municipalities, closely associated to the oil industry present in Linhares and São Mateus (Zanotelli et al., 2019).

In summary, the concentrated de-concentration of industrial and logistic units, the density of the general conditions

Chart 1 – People who commuted to work in São Mateus, Linhares and Aracruz by municipality of residence in 2010



Source: IBGE Demographic Census of 2010.

of production, the migration from the metropolitan region, the expansion of real estate production, and commuting demonstrate intensive interaction between the RMGV and the municipalities of Aracruz, Linhares and São Mateus. Those interactions, according to Lencioni (2003 and 2017), Moura (2009), Smith (1998) and Rua (2015a e 2015b), indicate and constitute aspects that can transform the contents of space, affording it metropolitan aspects through the metropolization process. Therefore, in light of those elements, it is possible to assert that there is transformation in the urban space of the State of Espírito Santo, more specifically, the metropolization of space in the northern coastline, through a process of expansion stemming from the RMGV.

Final considerations

The analysis of the metropolization process in Espírito Santo yields two fundamental results: on one hand, it shows that the process is expanding beyond the institutionalized limits of the RMGV, revealing that this is a limited view for a large portion of the analyses that use the metropolis as a spatial framework; on the other hand, it shows that the elements employed in this paper toward the analysis and delimitation of the metropolization process show major explanatory potential, and deserve to be analyzed together in greater depth.

In the specific case of Espírito Santo, the analysis confirms the proposition that there is an expanded RMGV, different from

the one posed by Zanotelli et al. (2014), who points to a qualitative expansion of the urban process of the RMGV toward the municipalities of Aracruz and Anchieta. It was detected that the expansion of the urban process is intensified in the coastal region, particularly the northern portion, in the municipalities of Aracruz, Linhares and São Mateus. Those municipalities are undergoing quantitative and qualitative transformations that are, among other things, associated to the metropolization process.

As such, this work not only analyzes that process in the State of Espírito Santo, but it also sought to present a theoretical-methodological proposal for the delimitation of the metropolization process as a result of ongoing research and reflection. As a proposal, therefore, it calls for advancement and further reflection, but the pathway undoubtedly goes through the joint use of indicators, processes and phenomena, in addition to field observation, which, together, considering the origins of their occurrences, can contribute toward a better understanding of the ongoing transformations.

The four elements that comprise the analysis (distribution of industrial and logistic plants; spatial distribution of the general conditions of production; commuting; and migration) are traditionally considered in the urban and regional studies literature (Smith, 1988; Ascher, 1998; Lencioni, 2003; 2007; 2013; Moura, 2009; Cunha, 2018), but their joint articulation was little explored, as they represent themes from different disciplinary frameworks, covering areas that range from economic geography and spatial economy to population studies, in the scope of population geography and demography, which goes to show the need for multidisciplinary efforts in order to visualize the complexity of recent urban, economic, and social processes.

It bears highlighting that the proposition presents a great opportunity to think about other realities of the metropolization process, with other territorial frameworks and different scales, as the goal is not to distinguish the urban from the rural or to define an urban morphology, but to identify where the metropolization of space unfolds more intensively, producing space in an unequal yet combined fashion.

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Notes

- (1) Lencioni, (2013, p. 72) points out that there are medium-sized cities undergoing metropolization processes for being directly connected to the global economy; and thus presenting some general production and service conditions that were previously only found in modern metropolises.
- (2) The analyses offered by Smith (1988) are not limited to the physical aspect of commuting. He raises the discussion regarding the costs of dislocating the labor force; however, he does not delve deeply in analysis methodologies for the subject.
- (3) The Metropolitan Region of Greater Vitória, instituted by a State Act, is comprised of seven municipalities: Cariacica, Fundão, Guarapari, Serra, Viana, Vila Velha and the capital Vitória. It bears pointing out that the conurbation area only includes Cariacica, Vila Velha, Serra and Vitória. The region occupies an area of 2.311 km², has a demographic density of 730 residents/km² and houses approximately 50% of the population of Espírito Santo.
- (4) The developments launched by Lorenge in Aracruz and Linhares can be visualized in the link: <https://www.lorenge.com.br/imoveis/?buscar=true&localidade=14,3>
- (5) The development launched by Cobra Engenharia in Aracruz and Linhares can be visualized in the link: <http://cobraengenharia.com.br/empreendimentos/>
- (6) For more information about the group MV Participações, see: <http://www.residencialmoradadosipes.com/>

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