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Industrialization and Urbanization: An Intrinsic Relationship in the Global South

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ABSTRACT

Considering that the defining element of contemporary society is money, capitalist logic sees industrialization as an essential element. Industrialization transforms various aspects of territoriality, and it is part of the process of converting rural to urban environments. Urbanization is a global phenomenon that occurs spatially in culture, behavior, and lifestyle, but there are sensible distinctions in how it proceeds in the global north and the global south. Industrialization in developing countries took place unevenly and did not translate entirely into improved economic standards. In Brazil's case, the territorial occupation model was based on domination, ignoring environmental aspects, similarly to what happens in metropolises, in which management is often guided by the logic of neoliberal globalization, ignoring local realities. Another characteristic is that the processes of industrialization and urbanization occurred simultaneously. Such a perspective, focused on industrialization to foster urbanization, weakens other actors. The importation of transnational models effectively converts traditional production models into forms appropriate to market capitalism. However, the imposition of a hegemonic logic of domination comes with several social and environmental costs.

Keywords: urbanization; capitalism; territory; global south.

RESUMO

Considerando que o elemento definidor da sociedade contemporânea é o dinheiro, a lógica capitalista vê a industriaçização como um elemento essencial. A industrialização transforma vários aspectos da territorialidade e é parte do processo de conversão de ambientes rurais para urbanos. A urbanização é um fenômeno global que ocorre espacialmente, na cultura, em comportamento e estilo de vida, mas há distinções sensíveis em como ocorre no norte global e no sul global. A industrialização no spaises em desenvolvimento ocorreu de forma desuniforme e não se traduziu totalmente em padrões econômicos melhores. No caso do Brasil, o modelo de ocupação territorial foi baseado em dominação ignorando aspectos ambientais, similarmente a o que ocorre em metropoles, em que a gestao é guiada pela logica de globalização neoliberal, ignorando realidades locais. Outra característica é que o processo de industralização e urbanização ocorreu simultraneamente. Tal perspectiva, focada em indutrialização para promover urbanização, enfraquece outros atores. A importação de modelos transnacionai é efetiva em converter modelos tradicionais de produção em formas apropriadas ao capitalismo. Porém, devido a imposição de uma lógica hegemonica de dominação, vem com varios custos ambientais e sociais.

Palavras-chave: urbanização; capitalismo; território; sul global.



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1. Introduction

For most of human history, small communities migrated in pursuit of natural resources (ELMQVIST et al. 2013), which can be considered a process between rural-rural environments (Fig. 1a). Due to the introduction of technology in agriculture, subsistence produce is set to be localized and cultivated in rural areas. There is, then, the beginning of the rupture between the countryside and the city (ELMQVIST et al. 2013) and the start of migratory flows in the rural-urban direction (Fig. 1b).

The "pre-modern" cities, distant from each other, occupied areas lesser in size than those of rural properties. At the time, a large part of the population lived in the countryside, and groups of inhabitants of the cities performed non-agricultural "work" (SIGLER et al. 2020). In contrast to this medieval regime, as highlighted by Mumford ([1961] 2008), there is a new period in which power and population were no longer dispersed and decentralized; the modern city is then consolidated as a political center of disorderly growth, notable by capitalism, the technique and many wars and disputes (MUMFORD, [1961] 2008 p. 425)

One of modern society's main formative and transformative factors was money, which formalized the exchange of goods and relativized the value of objects. In the industrialist context, money became the mediator of all relationships, making the economy the society's lifestyle (FERNANDES 2008). As a result, economic determinism influences society in function and territory (POLANYI 2012). In this way, it is possible to identify and define the third and current migratory flow, named an urban-urban movement by Plane et al. (2005) (Fig. 1c), which occurs between neighborhoods, cities, regions, and even countries - due to the industry's persuasion with the leverage of capital (AZZULIN 2021).

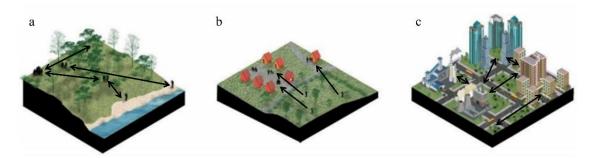


Figure 1. Migratory Flows. Source: Azzulin, 2021 (adapted).

Industrialization is a determining factor in transforming various aspects of territoriality, as it is a phenomenon that ubiquitously lasts for more than two centuries and is essential to the functioning of contemporary society. Its emergence occurred during the Industrial Revolution and is marked by technological innovation, which is the search for dynamic, effective, and qualified work (SAKURAI & ZUCHI, 2018).

In the First Industrial Revolution, the main productive activities related to the transformation of cotton and iron, but sectors such as engineering and ceramics also adapted within the revolutionary molds (TEMIN 1997). The rural area, seen as a non-urban space, was transformed by industry and even more intensely due to the Second Industrial Revolution, marked by the mass production of consumer goods (MENDONÇA 1997).

We can see a structural change defined essentially by the economic scope, in which industrialization triggers a rapid increase in manufacturing and a concomitant decline in agriculture in the economy. In this process, the center of the economy moves from rural areas to cities, and the degree of urbanization increases significantly (STERN et al. 2005). The modernization process of the economy, society, and its institutions co-occur; that is, economic transformation impacts human life, altering values, norms, beliefs, and customs of a traditional society and propone the emergence of modern society.



When referring to urban society, Lefebvre (1999 p. 15) states that it "is born from industrialization (...), which dominates and absorbs agricultural production", turning the agrarian sector into an industrial sector (LEFEBVRE 1999). As Industrialization could produce identical or similar products, it began to concentrate resources and people. The offer of jobs in centralized spaces, the cities, resulted in the urban-urban migration movement aforementioned (PLANE et al. 2005). Although there are similarities between industrial and rural production, it is incorporated differently in the urban areas because it becomes part of the modern and postmodern societies' construction process.

One of the main appeals of industrialization is to bring a greater capacity of labor division than in other formats, in addition to systematizing and standardizing territories on the market's logic (LEFEBVRE 1999). It managed to solve the employment and income problem of post-Industrial Revolution cities and justify the mass production of the urban areas in the world. The results of this process are majorly seen as favorable and ground public policies in favor of industrial development to this day.

When analyzing medieval cities, Christaller (1966) points out the direct dependence of complementary regions on their center. Differently, contemporary cities present a more significant relationship between other geographic units through flows of matter and energy, which result in connections between territories (SANTOS 2002).

Central places have a grander resource flux than peripheral regions, and transport has consolidated – and remains – as a mediator of flows between centralities and complementary areas, even helping to decentralize core areas (CHRISTALLER 1966). These input and output flows of urban areas are frequently compared to living organisms; the demand for energy and resources and the production of waste and other products are similar to the functions of biotic systems (WEST 2017).

Regarding the concentration of city activities and occupations, Lefebvre (1999) states that this process begins with centralization. As it grows, it passes to decentralization due to the specialization of its structures. As the general systems theory of Bertallanffy (1975) explains, a system develops and becomes more complex and starts to abandon the centralized form assuming a polycentric structure, a characteristic relative to natural systems.

By observing the shifts of centralization and decentralization, it is possible to identify how metropolitan regions, compared to non-metropolitan ones, have become spaces desired by the industry. These regions present a coherent platform of competitiveness, meeting global demands and having superior infrastructure, transport, density, and high population index (WANG & ZHAO 2018).

At the beginning of social studies that addressed the urban theme, there was a segregation between the rural and the urban space (REDFIELD 1956). Still, the interdisciplinary perspective of contemporary academia interprets such thresholds differently. Borders are seen as an element that exerts a notion of geopolitical discontinuity with symbolic (such as belonging to the place itself) and imaginary functions (ALBAGLI 2004).

As the urban environment depends on other regions (urban and non-urban), direct and indirect relationships between territories are noted (SANTOS 2002). According to Brunet (2001), the same individual can belong to more than one territory, even if they are never in it; this links to the appropriation and the direct or indirect use of one or another location. This phenomenon of belonging to different territories is mainly due to globalization and new technologies, which bring spaces together and reduce the scale of distance between places (GUPTA et al. 2015). An example of this is the relationship between rural areas and urban areas, in which an individual consumes products from places distant from where he lives.

Once we rescued this brief historical background of the modern cities' formation and the process of industrialization and formation of metropolises was explained, this article proposes to theoretically discuss the processes of industrialization and urbanization specifically in the Global South, giving greater emphasis to the



scenario of Brazil, from of the 19th century. We are interested in understanding how the current Brazilian urban reality is articulated in the global scenario regarding industrialization and the degree of development of cities. Events of historical relevance that caused changes in the way of living in cities are discussed, first observing the global scale and then deepening the debate in the geographical area of interest.

2. Industrialization and Urbanization in the World

Urbanization is a process that occurs worldwide and comprises the conversion of previously rural spaces into urban spaces through the transformation of the form of occupation, culture, behavior, and lifestyle (UNITED NATIONS 2018). Observing the Global North Axis, this migration movement from rural to urban areas had already exceeded 50% in 1950; this scenario directly reflects the period of industrialization experienced by both Europe and North America (BAIROCH 1988).

Currently, the percentage of global urbanization is uniform in different regions. Urbanization is one of the most significant global trends of the 21st century, with more than half of the world's population living in urban areas today. Therefore, cities are the locus of significant global challenges and should be considered centers of change and innovation, mainly due to the high concentration of people, resources, and activities (UNITED NATIONS 2018b). Knowing that the Global South Axis had its industrialization consolidated after the Global North Axis, it is imperative to identify how the implementation occurred and where it evolved the most since then, also checking if other processes influenced this period.

At the beginning of economic analyses, industrial production units were not considered a focus (KON, 1994). A large part of the economic theorists of the 18th century concentrated on fundamental relationships to construct their economic rhetoric; themes directly related to other areas of science (such as society, and nature, among others) were discarded (CECHIN & VEIGA 2010). With the process of urbanization arises other effects besides industrialization. Regions of the global north continue to urbanize, albeit at a pace of deceleration, but the industry itself shifts to the other hemisphere. This will be discussed in more detail later on.

Concerning standardized spaces following the logic of the market, Harvey (2016 p. 155) argues that "the creation and recreation of increasingly new space relations for human interactions is one of the most remarkable achievements of capitalism"; the author, in fact, questions whether cities are built for people or profit. The answer stems from the analysis of the "Production First" model, implemented in the industrial era and validated in the emerging countries, generating significant detrimental impacts. Maricato (2015 p. 69) still considers that "the hegemony of Fordism brought about great social changes by disseminating a strong discipline for work under the mechanized and repetitive rhythm of large industry."

The "Production First" concept, which emerged in the 19th century, advocates that financial resources be reinvested in production to achieve maximum economic growth. Wealth should not be directed to meet social needs because production compensates for societal deficiencies (BENNETT & LEVINE, 1977). According to Bennett and Levine (1977), Japan and several European countries are societies with a developed social conscience that have concluded the process of industrial development (post-industrial). They demand a change of values, in which the social prevails over the industrial, and the valuation of quality of life comes into evidence, contrary to the "Production First" model.

Despite industrialization being a core policy of governments in the urbanization of their territories, it is not the only process responsible for changes in the territorial pattern. However, as it presents itself as a definitive source of revenue for municipalities (ROBBINS& VELIA 2019), industrialization often hides the real potential of the region (GOLLIN et al. 2016; RIGOTTO 2007). In this case, the failure to include aspects of industrialization in environmental development indicators causes a delay in each territory's economic and sustainable development (BRAHMASRENE & LEE 2017).



In the 1860s, Europe and the United States went through a significant production of urban areas. As a result, the preeminent industrial zones transformed into metropolises (WANG & ZHAO 2018). The positive effects of the Industrial Revolution in the West induced emerging countries to replicate the industrial approach in regional development, which would also help reduce their dependence on developed countries (TEMURÇIN et al. 2017). This reproduction observed in developing countries occurred late and with intense urbanization due to the creation of specific local policies – as is the case of economic zones in India and China (BHAGYANAGAR et al. 2012; KUANG et al. 2013).

Unlike most countries in the Global North Axis, the opposite axis (Brazil, China, India, and Africa) also need to take responsibility for the current environmental challenges imposed by global policies, such as the 2030 Agenda – the most famous global action plan that brings together 17 sustainable development goals to eradicate poverty and promote a dignified life for all, within the conditions that our planet offers and without compromising the quality of life of the next generations. This situation inflicts more obstacles to developing the industrial model of these regions than those in post-industrial areas.

Due to the ability of industries to segment their functions in production and administration areas (PEREIRA JUNIOR 2015), it is possible to shift them across different territories. Regardless of positions and roles, this shows that they can be readily replaced (KON 1994). An example that shows the ease of industrial mobility can be pointed out in Ghana, Africa, where, despite having strategic industrial spaces in the Accra region, the creation of the Ghana Free Zones Board motivated the decentralization of industries throughout the country (TEMURÇIN et al. 2017). Another example consists of multinationals that install their initiatives in developing countries. At the same time, administrative and profitable functions, such as intellectual property, remain in the headquarters, usually in developed countries of origin (MENDONÇA 1995).

The continuity and adaptation of the capital to industrialization are perceptible. Harvey (2016) noted that the dominant powers of capitalism established the modern state (along with globalization) and crafted the territorial divisions between the 19th century and the beginning of the 20th. Following the logic of the division of industrial activities, this current system manages to centralize capital through territorial rationalization.

Despite industrialization being part of the historical development of European cities, most are scarcely industrialized or not at all; yet, the emergence of developed cities unrelated to industrial origins reveals that urbanization is not homogeneous in many aspects. For example, over 1 billion people live in slums (UNITED NATIONS n/d.), and we know there is a negative correlation between informal employment and gross domestic product (GDP) per capita; therefore, informal growth tends to reduce growth in developing countries. That means that cities in developing countries are informal, illegal, and slums; in summary, urban inequality has grown due to the concentration of wealth and social inequalities in cities. So, why do many countries still focus their public policies on industrialization? And, even if belatedly, what is the blueprint that makes the industrial model work or not?

For Charles Gore (2017), industrialization helps low-income countries to jump to middle income. However, for this jump to occur, developing countries focus directly on foreign companies - harming the national market and preventing the development of national and domestic companies with skills as complex. According to Alice Amsden (1992), this dependent relationship with the foreign market is justified by late industrialization. This condition, added to the absence of new technologies, forces countries to quickly absorb all the information about the functioning of the industrialization system – something that happened gradually in the recent manufacturing areas. These countries enter the global market and compete with other locations. If it does not have economic resilience or adherence to new technologies, it will hardly abandon its level of subordination or its "developing" status within the industrial model.



Within the context of late industrial development, China presented drastic changes regarding migration in urban areas between the 1950s and 1990s. At the onset of Chinese industrialization, attempts tried to replicate Soviet standards for the country's development, that is, by transferring labor from rural to urban areas and adhering to resource rationing policies. In the following period, the stagnation of cities, added to the reduction of supplies due to the loss of labor and natural disasters in the rural sector, caused production collapse and hunger. As a mitigation strategy, the Chinese authority redirected migration to rural areas, adhering to an oriented agricultural development plan. Between 1961 and 1976, more than 50 million people emigrated from urban areas. Rural places began to develop due to industrialization, and villages became more urbanized. The final period, which started in 1978, is marked by the expansion of agriculture and industry concurrently, differing from the initial scope of industrial intensification (YOUNG & DENG 1998).

Despite being late in Asia, there is a different development thinking, modifying the industrial expansion model imposed by the Industrial Revolution and adapting it to its society (AMSDEN 1992). In this groundwork, the region (with emphasis on Japan) participated in the bloc of countries that started the Third Industrial Revolution, driven by technological investments. The region also invested in services, government activities, transport, and commerce. This increased in urbanized areas, proving that, for the part, the division of labor directly influences urbanization (GOLLIN et al. 2016).

Examining the indicators of tourism, industrialization, urbanization and globalization, economic growth, and the environment in Southeast Asia, Brahmasrene and Lee (2017) identified that, in the long term, the combination of these elements brings balance to the region; industrialization and urbanization alone, however, impact with increasing CO2 emissions.

It was not just the Chinese government that changed the territorial formation through policies. Romania promoted deforestation in favor of urban occupation, followed by industrialization in the 19th century. XIX to XX, however, the impact that the region suffered was after the end of the communist regime. Public forests became private, and the new owners started using the land for enrichment (agriculture and natural resource extraction). Due to this change, urbanization and suburbanization expansions (GRIGORESCU & GEACU 2017) further segment the territory.

In most states of Latin America, urbanization occurred disorganized and antagonistic way. It created a rift between society and the political system, which crippled social evolution. Such is evident by observing the economic development of Mexico, which, before the 1911 Revolution, had an agrarian economy that concentrated in 3% of the population. Even with industrialization, this pattern did not change (HAMBURG 1972). In the territorial sense, the population dispersion changed, but none in social behavior; a phenomenon which shows that the vast majority of society becomes hostage to the economic models imposed by the State. Unlike Europe and the United States, Latin America has a higher rate of urbanization than industrialization, which results in a predominance of the third sector (services) in the division of labor (HAMBURG 1972). More recently, authors such as Camacho and Moschini (2021) and Bressane et al. (2019) are also dedicated to analyzing these aspects of the Latin urbanization process and the impact of industrialization on the conformation of cities, more specifically in the reality of Brazilian metropolises, such as Campinas and Sorocaba, in São Paulo.

Another indicator of urbanization and industrialization analysis among countries is motorization. It measures how the increase and intensity of urbanization directly affect mobility and transport. The demand for manufactured products, raw materials, and food increase vehicle traffic inside and outside urban areas (SADORSKY 2014) since those have a different origin from locations of greater demographic density.

The effects of motorization link to health; air pollution caused by vehicles intensified by high-gauge buildings, which influence the movement of winds and consequently impact population health (TOLEDO &



NARDOCCI 2011). According to Kevin Lynch (2011), the indicators "motorization" and "tall buildings" are identified as "main characters" within the imageability of cities. In metropolitan regions, this imageability also occurs on an even larger scale.

3. Industrialization and Urbanization in Brazil

The economic growth resulting from the Industrial Revolution, mainly in Europe and the United States, induced other Western countries to replicate the same approach to regional development to reduce dependence on imports of products and goods of industrial origin (TEMURÇIN et al. al. 2017). Infiltrating Brazil, economic rationalism influenced both economy and society, including determining its development location (DAGNINO, THOMAS, and DAVYT, 1996). The standardization promoted by the industrial civilization reproduces in social life (POLANYI 2012).

The Brazilian territorial occupation model was not revolutionary but one of domination. According to Fernandes and Sant'Anna (2007), this model of territorial occupation was also not concerned with environmental aspects or potential sites that could be used. Observing that territory suffers external influence, the "development projects" implemented come from political movements (internal and external). For instance, the basis of the goals plan of the government of Juscelino Kubitschek (1956 – 1961), when industrialization took hold in the country, was substantiated by projects in France (FURTADO 1998).

Considering the world scenario of the Second Industrial Revolution, there was a growing need for raw materials to assemble artifacts and intense demand for products for consumption in urban areas. The importation of these elements from the great world powers shaped a pluralistic world economy, with exchanges between developed and undeveloped countries (MENDONÇA 1997). However, at that time of colonial Brazil, Portugal did not see the industrialization of the Brazilian territory as advantageous since, as a colonizing country, it already had all the resources, labor, capital, and products supplied by the colonized (MENDONÇA 1995).

The Portuguese crown model of exploration of Brazilian territory was characterized by the contempt for the fauna and flora added to the practice of monoculture of exotic species, such as sugar cane and cattle measures always aimed at economic enrichment (PÁDUA 2004). Such production practices were so farreaching that even today, Brazil is the largest exporter of cane sugar in the world (FAO 2019), and concerning cattle breeding, the country is one of the largest distributors in the world (MINISTÉRIO DA AGRICULTURA 2019).

Until 1940, the percentage of the population residing in urban areas was insignificant (SANTOS 2018), concentrated mainly in the country's southeast due to the foreign capital from the coffee culture. Also, during this period, there were significant investments in railways and banks, helping the growth of tertiary services (MENDONÇA 1995). Urbanization then was weak and dispersed because the region carried a rural identity; the coffee sector dispersed the population for it had fewer workers and small family nuclei (BUFFON 1992).

Brazil started to diminish its agricultural investments at the end of the Second World War, which marked the beginning of its industrialization. Since most war-torn countries were selling their machinery at more affordable prices, Brazil took it as an opportunity (MENDONÇA 1995); investment, however, oscillated due to conflicts with the ruralist political class, weakening industrial development in the post-war period (MENDONÇA 1997).

Along with industrialization, urbanization started at the end of the 19th century (CARMO 2017). The existing urbanization models were adopted with a certain passivity, even in cities oriented to rural production models, which devoted their resources to agricultural cultivation (LEFEBVRE 1999).

The Brazilian Federal Constitution of 1988 emancipated municipalities, which previously depended on the central power, to deliberate on land use patterns such as industrial and urban areas. In the same sense, the



horizontal urban expansion of Brazil started to be regulated by Federal Law n. 6766/79 (BRASIL 1979), which provides guidelines for the subdivision of land use. However, it didn't establish adequate instruments for territorial expansion, resulting in dispersed urban growth. (CAETANO et al. 2017). The management of urban environments by the Brazilian state is considered anachronistic since public policies structured for cities of that time did not undergo changes when large metropolises emerged (COSTA 2015).

Specifically, in Ceará state, at the end of the 20th century - which was the industrialization period -the Municipal Human Development Index (IDHM) increased. By studying this progress in more detail, Rigotto (2007) found that the increase was related to education and health improvements, two sectors increasingly receiving more investment. Another example is the Metropolitan Region of Curitiba, which, according to Azzulin (2021), designates almost a third of the urban area for industrialization. In addition, municipalities with smaller IDHM are the ones that need to industrialize the most, mainly situated in the capital's periphery, demonstrating that industry also helps in territorial inequality (AZZULIN 2021).

According to Maricato (2015), Brazilian metropolises are shaped by the logic of neoliberal globalization, making cities and what they comprise a commodity. Thus, public policies currently applied to the entire Brazilian territory are questionable, as they follow the model of globalization, oblivious to local realities (BRESSANE et al. 2019).

In the time frame from 1970 to 2010, when different states in Brazil tried to outline strategies to expand industrial absorption, the state of São Paulo stands out for concentrating a large part of the country's industrial employment, especially in the Metropolitan Region of São Paulo. (Região Metropolitana de São Paulo - RMSP) (PEREIRA JUNIOR 2015). There is an industrial decentralization in the territory with the centralization of capital in more affluent population strata, causing a deficit in the regions that housed the other productive segments (TELLES 1994).

Until the end of the 1960s, industrialization, urbanization, and modernity were ideal development due to implementation success in other countries. In general, this impacted all of Latin America, which began to ordain large parcels of GDP to the sector. However, political instability and lack of diversification in consumer durables contributed to the failure of economic development, making industrial maturity impossible in this region (ALMANDOZ 2008).

There was an increase in the creation of metropolitan regions in the same period of the industrial race. The Federal Constitution, the legal framework that gave rise to the first nine metropolitan regions, enabled in less than 20 years the creation of another 36 (BARRETO 2012). According to Silva (2012), a "movement" that accompanied this formation of metropolitan regions, generating consequences for urbanization, was the "difficulty in accessing urbanized and formal land" mainly by the poorest population.

Another impacting factor in the urban-industrial issue was the implementation, in the second half of the 20th century, of the Goals Plan and the II National Development Plan, stimulating investments by Brazil in the industrial area and its diversification. By the end of the 1980s, the country was already structurally complete in the industrial field (VERSIANI & SUZIGAN 1990). Currently, Brazil is one of the most industrialized countries in the world (ANA 2017; BRESSANE et al. 2019), having industrialization policies initially focused on the South and Southeast, to the detriment of other regions - which in the future would be more strategic for industrialization, as is the case Northeast (PEREIRA JUNIOR 2015).

Unlike most countries in the Global North Axis, in Brazil, the industrial and urbanization processes happened simultaneously, in addition to a set of Environmental and sustainability Agendas that resulted in greater complexity for planning cities. As is the case of Habitat III (UNITED NATIONS ORGANIZATION 2019), these agendas provide international involvement in implementing goals and objectives dedicated to urban areas, showing their impact on a global scale.



4. Reflection Points

The dependence risk on industrialization for urbanization weakens other potential actors of territory development, as discussed in the case of the State of Ceará and the Metropolitan Region of Curitiba, both in Brazil.

Industrialization marks a turning point in the world's urbanization, but this strategy must be leveraged for the benefit of society. As each territory and its respective population varies by region, an essentially rationalized model, such as the industrial process, can exert positive and negative influences in different circumstances (AZZULIN 2021).

Imported transnational models, such as the industrialism of the global north, are efficient ways of converting traditional production models into forms suited to market capitalism. However, such changes occur with cultural, social, humanitarian, and environmental costs due to the imposition of a hegemonic logic of domination.

Recent advances in environmental governance (JEDYN et al. 2021) indicate that integrating the population in decision-making results in effective and democratic forms of sustainable exploitation of conservation areas. In the case of the development of cities and industrialization, the reasoning remains. Incorporating the population and local perspectives in decision-making processes, the process of rupture between rural society and industrial society would be gradual and focused on the need to optimize local production.

The big question regarding Brazilian industrialization and the production of its urban territory lies in the decontextualization between the insertion of new industrial technologies and its rural past. This generated a conflicting implementation process due to problems with the ruling ruralist class and the population, which objectively had no choice but to accept the new modus vivendi.

Unlike the countries of the northern axis, Brazil (as well as the southern axis) is still industrialized but without a country project. It just follows a tendency of mimicry of northern countries' model. Additionally, environmental policies are constantly changing to adapt to market rationalization, boosting the capitalist production model. But we are a country different from others, still with many natural resources and immense biotechnological, biodiversity, and cultural potential. Is really following global standards the best decision?

References

ALMANDOZ, Arturo. Despegues sin madurez: Urbanización, industrialización y desarrollo en la Latinoamérica del siglo XX. EURE (Santiago), v. 34, n. 102, p. 61-76, 2008.

AMSDEN, Alice H. A difusão do desenvolvimento: o modelo de industrialização tardia e a Grande Ásia Oriental. Revista de Economia Política, v. 12, n. 1, p. 133- 40, 1992.

ANA - AGÊNCIA NACIONAL DE ÁGUAS. Água na indústria: uso e coeficientes técnicos. Brasília: ANA, 2017.

AZZULIN, Mayara B. A Influência da Industrialização na Territorialidade Urbana da Região Metropolitana de Curitiba. 2021. 134 f. Dissertação (Mestrado em Tecnologia e Sociedade) – Programa de Pós-Graduação em Tecnologia e Sociedade, Universidade Tecnológica Federal do Paraná, Curitiba, 2021

BAIROCH, Paul. Cities and economic development: from the dawn of history to the present. University of Chicago Press, 1988. Disponível em < . Acesso em 14 fev. 2020.

BARRETO, Ilson Juliano. O surgimento de novas regiões metropolitanas no Brasil: uma discussão a respeito do caso de Sorocaba (SP). Espaço e Economia. Revista Brasileira de Geografia Econômica, n. 1, 2012.

BENNETT, John W.; LEVINE, Solomon B. Industrialization, and Urbanization in Japan: The Emergence of Public Discontent. In: ______, The Many Facets of Human Settlements. Pergamon, 1977. p. 205-218.



BERTALANFFY, Ludwig Von. Perspectives on general system theory: Scientificphilosophical studies. George Braziller, 1975.

BHAGYANAGAR, Rajagopal; KAWAL, Babita; DWARAKISH, Gowdagere; SURATHKAL, Shrihari. Land use/land cover change and urban expansion during 1983-2008 in the coastal area of Dakshina Kannada district, South India. Journal of Applied Remote Sensing, v. 6, n. 1, p. 063576-1 - 063576-17, 2012.

BRAHMASRENE, Tantatape; LEE, Jung Wan. Assessing the dynamic impact of tourism, industrialization, urbanization, and globalization on growth and environment in Southeast Asia. International Journal of Sustainable Development & World Ecology, v. 24, n. 4, p. 362-371, 2017.

BRASIL. Lei Federal nº 6766, de 19 de dezembro de 1979. Dispõe sobre o Parcelamento do Solo Urbano e dá outras Providências.

BRESSANE, A.; MOTA, M. T.; FENGLER., F. H.; ROVEDA, J. A. F.; ROVEDA, S. R. M. M.; MEDEIROS, G. A.; RIBEIRO, A. I. Alternative Scenario Simulation for Urban Sprawl Based on Population Dynamics: A Methodological Proposal. Fronteiras: Journal of Social, Technological and Environmental Science, v. 8, n. 1, p. 265-81.

BRUNET, Roger. Le déchiffrement du monde. Théorie et pratique de la géographie. Paris: Belin, 2001

BUFFON, José Antônio. O café e a urbanização no Espírito Santo: aspectos econômicos e demográficos de uma agricultura familiar. Dissertação (Mestrado) – Programa de Pós-Graduação em Economia da Universidade de Campinas. Campinas, 1992.

CAETANO, Fernando Domingues; MEIRA, Jeronimo Paula da Cunha Pimentel de; AZZULIN, Mayara Bormann. ST 8 Análise da correlação entre a dispersão urbana e o número de características urbanísticas no entorno dos domicílios nos municípios paranaenses com mais de 50 mil habitantes. In: ENANPUR, v. 17, n. 1, (Anais...), 2017.

CAMACHO, V. A. L.; MOSCHINI, L. E. Planejamento Ambiental Urbano: a Relação entre a Cobertura Vegetal e Temperatura Superficial na Cidade de São Carlos, São Paulo, Brasil. Fronteiras: Journal of Social, Technological and Environmental Science, v. 10 n. 2, p. 116-31

CARMO, Julio Cesar Botega do. Planejamento da Região Metropolitana de Curitiba como objeto de estudo: análise sobre a produção bibliográfica no período de 1974- 2006. urbe. Revista Brasileira de Gestão Urbana, v. 9, n. 1, p. 7-18, 2017.

CECHIN, Andrei; VEIGA, José Eli da. O fundamento central da economia ecológica. Economia do meio ambiente: teoria e prática, v. 2, p. 33-48, 2010

CHRISTALLER, Walter. Central places in southern Germany. Prentice-Hall, 1966.

COSTA, Paulo Eduardo de Oliveira. O desafio metropolitano: legislação urbanística e crescimento urbano em São José dos Campos. In: Seminario Internacional de 106 Investigación en Urbanismo, VII, 2015, Barcelona-Montevideo. (Anais...) Departament d'Urbanisme i Ordenació del Territori. Universitat Politècnica de Catalunya, 2015

ELMQVIST, Thomas; FRAGKIAS, Michail; GOODNESS, Bural; GÜNERALP, Burak; MARCOTULLIO, Peter J.; McDONALD, Robert; PARNELL, Susan; SCHEWENIUS, Maria; SENDSTAD, Marte; SETO, Karen; WILKINSON, Cathy. (Ed.). Urbanization, biodiversity and ecosystem services: challenges and opportunities: a global assessment. Springer, 2013.

FAO – Food and Agriculture Organization of the United States. Estados Unidos. Disponível em . Acessado em 25 de out. 2019.

FERNANDES, Valdir. A racionalização da vida como processo histórico: crítica à racionalidade econômica e ao industrialismo. Cadernos EBAPE, v. 6, n. 3, p. 1-20, 2008.

FERNANDES, Valdir., & SANT'ANNA, Fernando Soares Pinto. (2007). A Inserção da dimensão ambiental nas indústrias catarinenses e A sua correlação com as políticas públicas. *Brazilian Journal of Environmental Sciences* (Online), (06), 4-8. Retrieved from

http://www.rbciamb.com.br/index.php/Publicacoes_RBCIAMB/article/view/450

FURTADO, Celso. O capitalismo global. São Paulo: Paz e Terra, 1998

GOLLIN, Douglas; JEDWAB, Remi; VOLLRATH, Dietrich. Urbanization with and without industrialization. Journal of Economic Growth, v. 21, n. 1, p. 35-70, 2016.

GORE, Charles. Late industrialisation, urbanisation and the middle-income trap: an analytical approach and the case of Vietnam. Cambridge Journal of Regions, Economy and Society, v. 10, n. 1, p. 35-57, 2017.

GRIGORESCU, Ines; GEACU, Sorin. The dynamics and conservation of forest ecosystems in Bucharest Metropolitan Area. Urban Forestry & Urban Greening, v. 27, p. 90-99, 2017.

GUPTA, Joyeeta; PFEFFER, Karin; ROS-TONEN, Mirjam; VERREST, Hebe. Setting the scene: The geographies of urban governance. In: _____. Geographies of Urban Governance. Springer, Cham, 2015. p. 3-25. https://doi.org/10.1007/978-3-319-21272-2_1

HAMBURG, Roger. Urbanization, industrialization, and modernization in Latin America: Soviet views. Studies in Comparative Communism, v. 5, n. 1, p. 1-20, 1972

HARVEY, David. A loucura da razão econômica: Marx e o capital no século XXI. Boitempo Editorial, 2016 JEDYN, Adrian et al. Conservação da natureza sob a perspectiva da gestão comunitária. Revista Tecnologia e Sociedade, v. 17, n. 49, p. 201-218, 2021.

KON, Anita. Economia industrial. NBL Editora, 1994.

KUANG, WenHui; LIU, JiYuan; ZHANG, Zeng Xiang; LU, Deng Sheng; XIANG, Bao. Spatiotemporal dynamics of impervious surface areas across China during the early 21st century. Chinese Science Bulletin, v. 58, n. 14, p. 1691-1701, 2013.

LEFEBVRE, Henri. A Revolução urbana. Belo Horizonte: Editora UFMG, 1999.

LYNCH, Kevin. A imagem da cidade. 3ª edição. WMF Martins Fontes. São Paulo, 2011. negrito em wmf MARICATO, Ermínia. Para entender a crise urbana. CaderNAU, v. 8, n. 1, p. 11-22, 2015.

MENDONÇA, Sonia Regina de. A industrialização brasileira. Editora Moderna, 1995.

MENDONÇA, Sônia Regina de. O ruralismo brasileiro: 1888-1931. Editora Hucitec, 1997.

MINISTÉRIO DA AGRICULTURA. Política Agrícola. 2019. Disponível em: . Acessado em 17 de jun. 2019. MUMFORD, Lewis. (1961). A cidade na história: suas origens, transformações e perspectivas. Trad. Neil R da Silva. 5ª ed. São Paulo: Martins Fontes, 2008.

PÁDUA, José Augusto. A ocupação do território brasileiro e a conservação dos recursos naturais. In: ______, Unidades de conservação: atualidades e tendências, p. 12-19, 2004

PEREIRA JUNIOR, 2015

PLANE, David A.; HENRIE, Christopher J.; PERRY, Marc J. Migration up and down the urban hierarchy and across the life course. Proceedings of the National Academy of Sciences, v. 102, n. 43, p. 15313-15318, 2005.

POLANYI, Karl. A subsistência do homem e ensaios correlatos. Rio de Janeiro: Contraponto, p. 215, 2012.

REDFIELD, Robert. Peasant Society and Culture. American Journal of Sociology, v. 52, p. 1-17, 1956.

RIGOTTO, Raquel Maria. Caiu na rede, é peixe: a industrialização tardia e suas implicações sobre o trabalho, o ambiente e a saúde no Estado do Ceará, Brasil. Cadernos de Saúde Pública, v. 23, p. S599-S611, 2007.

ROBBINS, Glen; VELIA, Myriam. In with the New and Out with the Old? Industrial Estates and the Prospects of Manufacturing in Durban, South Africa. In: Urban Forum. Springer Netherlands, 2019. p. 35-55.



SADORSKY, Perry. The effect of urbanization and industrialization on energy use in emerging economies: Implications for sustainable development. American Journal of Economics and Sociology, v. 73, n. 2, p. 392-409, 2014.

SAKURAI, Ruudi; ZUCHI, Jederson Donizete. As revoluções industriais até a indústria 4.0. Revista Interface Tecnológica, v. 15, n. 2, p. 480-491, 2018

SANTOS, Milton. A natureza do espaço: técnica e tempo, razão e emoção. Edusp, 2002

SANTOS, Milton. A Urbanização Desigual. São Paulo: Edusp, 2018.

SIGLER, Thomas; SEARLE, Glen; MARTINUS, Kirsten. Economic Cities. In:______, Understanding Urbanism. Palgrave Macmillan, Singapore, 2020. P. 27-45.

SILVA, Madianita Nunes da. A dinâmica de produção dos espaços informais de moradia e o processo de metropolização de Curitiba. 259 f. Tese (Doutorado em Geografia) — Programa de Pós-Graduação em Geografia, Universidade Federal do Paraná, Curitiba, 2012.

TELLES, Edward E. Industrialization and racial inequality in employment: the Brazilian example. American Sociological Review, p. 46-63, 1994.

TEMIN, Peter. Two views of the British industrial revolution. The Journal of Economic History, v. 57, n. 1, p. 63-82, 1997.

TEMURÇIN, Kadir; KERVANKIRAN, İsmail; DZIWORNU, Michael Gameli. Spatial Structure and Distribution of Manufacturing Industries in the Greater Accra Region of Ghana. Studies of the Industrial Geography Commission of the Polish Geographical Society, v. 31, n. 4, p. 71-82, 2017.

TOLEDO, Giovana Iara Ferreira Moser de; NARDOCCI, Adelaide Cássia. Poluição veicular e saúde da população: uma revisão sobre o município de São Paulo (SP), Brasil. Revista Brasileira de Epidemiologia, v. 14, p. 445-454, 2011.

UNITED NATIONS. World Population Prospects: 2017 Revision, Department of Economic and Social Affairs, New York, 2018.

UNITED NATIONS. Department of Economic and Social Affairs. 68% of the world population projected to live in urban areas by 2050, says UN. News, 16 May 2018. 2018b. Available on: https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html. Accessed May 15, 2022

UNITED NATIONS. Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient and sustainable. SDG Goals, n/d. Available on: https://unstats.un.org/sdgs/report/2019/goal-11/. Accessed May 15, 2022

VERSIANI, Flávio R.; SUZIGAN, Wilson. O processo brasileiro de industrialização: uma visão geral. In: Congresso Internacional de História Econômica. Brasília, 1990.

WANG, Liwei; ZHAO, Pengjun. From dispersed to clustered: New trend of spatial restructuring in China's metropolitan region of Yangtze River Delta. Habitat International, v. 80, p. 70-80, 2018.

WEST, Geoffrey B. Scale: the universal laws of growth, innovation, sustainability, and the pace of life in organisms, cities, economies, and companies. Penguin, 2017.

YOUNG, Denise; DENG, Honghai. Urbanisation, agriculture and industrialisation in China, 1952-91. Urban Studies, v. 35, n. 9, p. 1439-1455, 1998.