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Industrialization and deindustrialization: a conceptualization essay based on the Marxian economic theory

Industrialização e desindustrialização: um ensaio de conceituação baseado na teoria econômica marxiana

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This essay aims to define the concepts of industrialization and deindustrialization, based on the Marxian economic theory. Historically, although deindustrialization is observed in relevant national economies (parts), this is not a systemic phenomenon of the global economy (totality). Theoretically, capitalist industrialization is identified as the establishment of productive forces in the machinery stage at the national level and under the economic laws of the capitalist mode of production. In turn, capitalist deindustrialization is defined as the reduction and decline of the economic weight of manufacturing, as a result of capitalist laws, in the expanded reproduction of social capital and, consequently, in the self-determination of the general law of accumulation in the national territory. Made possible by the level of capitalist development achieved by the productive forces, the structural changes in the core of the 1970s capitalist crisis of profitability were pointed out as the cause of capitalist deindustrialization.

Keywords: Industrialization. Deindustrialization. Global value chains. International division of labor. Marxian economic theory.

O ensaio propõe uma definição, à luz da teoria econômica marxiana, dos conceitos de industrialização e do seu oposto, a desindustrialização. Partindo das categorias fenômeno, essência e conteúdo, argumenta-se que, historicamente, foram as leis que regem o capitalismo que levaram aos processos de industrialização e de desindustrialização de - economias nacionais relevantes (partes), mas não do capitalismo como sistema econômico global (todo). A industrialização capitalista é identificada como o estabelecimento concreto de forças produtivas em estágio maquinofatureiro no âmbito nacional através das leis próprias do modo de produção capitalista. A desindustrialização capitalista é definida como o desadensamento da estrutura maquinofatureira, resultante das leis capitalistas, a ponto de interferir na reprodução ampliada do capital nacional e, consequentemente, na autodeterminação da (lei geral da) acumulação em seu território. No que tange à desindustrialização, especificamente, aponta-se as mudanças estruturais motivadas pela crise capitalista de lucratividade despontada na década 1970 como sua causa essencial.

Palavras-chave: Industrialização. Desindustrialização. Cadeias globais de valor. Divisão internacional do trabalho. Teoria econômica marxiana.

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INTRODUCTION

Deindustrialization has been one of the main topics of debate over the years in debates regarding the course of capitalism. However, such debates have investigated these issues superficially as they follow the *mainstream* economic tradition, which overlooks its underlying essence of phenomena. This is clear by considering the main ways of measuring deindustrialization, which focus on variables such as employment and/or value-added relative to manufacturing (Neuss, van, 2018). Furthermore, traditional literature argues that deindustrialization occurs due to several factors, e.g., the natural change of the economic structure and the statistical illusion caused by changes in national accounting (Palma, 2005). An aspect of deindustrialization that may be criticized is the differentiation between forms of deindustrialization because these are typically limited to the association of 'positive' (natural) or 'negative' (premature) aspects of deindustrialization with the level of per capita income of the country under study (Palma, 2005).

This theoretical essay aims to deepen and detail the conceptual elements of a new perspective on deindustrialization, as presented by Almeida (2018), Almeida and Balanco (2024a; 2024b), and Araújo, Almeida and Leite (2025). In these works, the authors provide a Marxist interpretation of the phenomenon of deindustrialization by empirically analyzing the Brazilian economy. This paper presents and further develops the theoretical and historical elements that underpin that conception. Furthermore, the aim was to present, through a historical-concrete analysis of the capitalist industrial organization, the correlation between theoretical concepts and the historical process of capitalist industrialization, alongside the factors responsible for the deindustrialization experienced by capitalist countries since the transformations that began in the 1970s. The hypothesis is that, before the 1970s, accumulation occurred under specific forms that contributed to national capitalist development under the leadership of manufacturing activity, especially domestic manufacturing. However, during the post-WWII period and the economic crisis of the 1970s, obstacles emerged towards the general process of capital accumulation. It became evident that new forms of valorization were required to be established. In this study, we highlight the rise of industry based on global value chains (GVCs) and the establishment of a new international division of labor.

The method adopted for the formulation of this perspective begins with the identification of the phenomenon itself. First, the logical precondition for an economy to experience a process of deindustrialization lies in the requirement that it has previously internalized an industrialization process. Therefore, by assuming that deindustrialization is a phenomenon to be investigated, it is necessary to understand its opposite, i.e., industrialization. Although this assumption seems unnecessary, it will become clear throughout the text why understanding industrialization is necessary before discussing the deindustrialization phenomenon. Considering that the two phenomena are opposites, we will treat both as components of a unit and seek to fulfil the two main objectives of the manuscript

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simultaneously: i) to present a concept of industrialization based on Marxian economic theory by defining the phenomenon, the essence, and the content of industrialization; and ii) to conceptualize, theoretically, the phenomenon of deindustrialization, which, in addition to the previous elements, requires pointing out its fundamental causes.

The text is structured into 3 sections, excluding this Introduction. Section 2 introduces the phenomenon of capitalist deindustrialization, which manifests itself in several national economies (parts) but is not incorporated as a systemic characteristic of world capitalism (totality). At a higher level of abstraction, the theoretical formulations of industrialization and deindustrialization are developed in Section 3. In Section 4, through a historical-concrete analysis of capitalist industrial organization, a connection is established between theoretical concepts and the historical process of capitalist industrialization, alongside an identification of the fundamental determinants of deindustrialization that emerged from the 1970s onward. The hypothesis advanced is that this dynamic operated through specific forms that contributed to national capitalist development under the leadership of manufacturing activity, particularly at the local level. However, following the transformations set in motion after World War II and the crisis that manifested in the 1970s, as these older forms became an obstacle to the general process of capital accumulation, they were ruptured, necessitating the establishment of new concrete forms of valorization. Specifically concerning the present study, emphasis is placed on the rise of industry based on global value chains and the formation of a new international division of labor. Finally, we present the concluding remarks.

DEINDUSTRIALIZATION: A SYSTEMIC PROBLEM OF CAPITALISM?

Deindustrialization is well-known in Economic Sciences – there have been several studies dating back to the 1970s. However, there was a large increase in the literature surrounding this topic in the 1980s, mainly from studies conducted in Cambridge (England). Among these, Rowthorn and Wells (1987) stated that deindustrialization corresponds to a decrease in manufacturing employment in relation to total employment. Subsequently, Tregenna (2009) discussed the need to address value-added analysis in discussions on deindustrialization. There are also studies that sought to analyze deindustrialization based on indicators of international trade in manufacturing and its role in the balance of payments (Blackaby, 1978; Cairncross, 1978; Singh, 1977, 1989).

According to van Neuss (2018), there are four fundamental factors that explain the causes of deindustrialization: 1) non-homothetic preferences, which relate the increase in income to the decline in the relative demand for final manufactured goods (Engel's law); 2) technology, which relates the migration of jobs from more dynamic and productivity sectors (e.g., manufacturing) to less dynamic sectors that produce goods with lower demand

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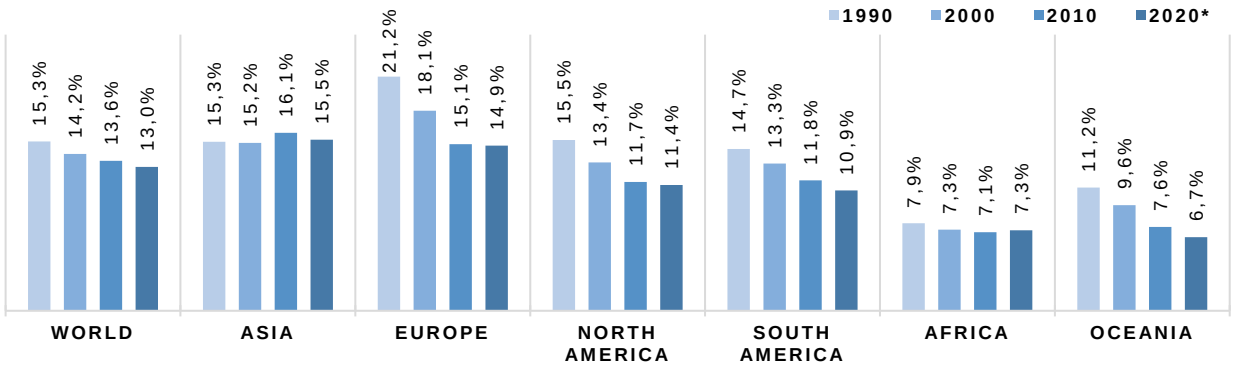
elasticity (Baumol's cost disease); 3) outsourcing, which relates deindustrialization to the process of transferring activities directly related to manufacturing to the professional and business services (statistical illusion); and 4) international trade, which relates deindustrialization to the intensification of manufacturing trade between the economies of the core (Global North) and the periphery (Global South) of the world economy (North-South Trade).

By evaluating OECD economies, van Neuss (2018) highlights, among others, the literature which evaluates the role that international trade plays on deindustrialization – measured by manufacturing employment participation in relation to total employment. This author highlights the following two correlated conclusions: i) the available literature gave little importance to international trade, especially the North-South trade, as a causative element of deindustrialization in advanced countries; ii) the exports from the South to the Global North (OECD countries) have contributed to a decline of up to 40.6% in manufacturing employment in OECD countries, e.g., in the USA, the decline was 36.9%.

Although substantiated by different theoretical conceptions, the present study dialogues with these recent (and some older) findings regarding the apparent causes of capitalist deindustrialization. As will be shown in Section 4, we argue that the best way to find the primary cause of deindustrialization lies in the analysis of the current international division of labor and the consequent formation of global value chains[1].

By observing the differences in the share of manufacturing employment in total employment in both the world and each continent separately (**Figure 1**), we noticed a slight reduction in the proportions between the 1990s and the year 2020. This reduction was observed in all continents, except Asia, indicating that for Asian countries, manufacturing has maintained its role in the whole economic dynamic.

Figure 1 - Share of manufacturing employment in the total employment by continent: 1990-2020



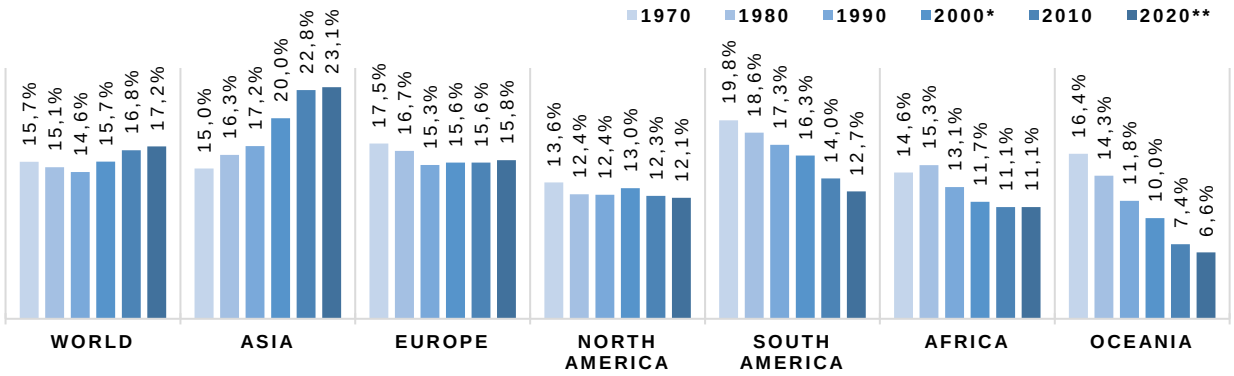
Source: Elaboration of the authors, based on data from https://ilostat.ilo.org/topics/employment/
* Only the year 2020.

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However, to evaluate manufacturing employment, we must consider an essential factor: manufacturing and other activities that subsidize it are the most dynamic sectors. Thus, as discussed by Karl Marx in 'The Capital', it is necessary to consider the fact that the increase in productivity is directly related to the substitution of labor power by the machine in the production process (elevation in the technical composition of capital). Therefore, part of the decrease in manufacturing employment may have occurred due to technological progress. Consequently, there is a tendency in advanced countries for deindustrialization to have a 'positive' outcome according to Rostow (1959, 1960), because this would result in elements associated with a higher stage of economic development (Rowthorn e Wells, 1987). The literature points out that this is the case in most countries in Europe, and North America. Otherwise, in peripheral countries, deindustrialization would have a 'negative' outcome, as it would occur during a previous stage of capitalist development, in which the best conditions for productivity and consumption would not yet be established (Rowthorn e Wells, 1987). South American economies are such examples of a negative deindustrialization.

To qualify the analysis of deindustrialization and its 'types', Tregenna (2009) evaluated the variations in manufacturing employment considering variables such as economic growth, the differential use of the labor force between sectors, and the share of the manufacturing value-added in GDP. Nowadays, most literature has included the manufacturing value-added as a variable of analysis. **Figure 2** shows the share of manufacturing value-added in the total value-added by continent (and world).

Figure 2 – Share of the manufacturing value-added in the total value-added by continent: 1970-2020



Source: Elaboration of the authors, based on data from http://data.un.org/
* Chinese data begin in 2004.
** Only the year 2020.

Between the 1970s and the year 2020, there was no decrease in the share of the manufacturing value-added in relation to the total value-added in the world. At the beginning of that period, the share of the manufacturing value-added in the total economy

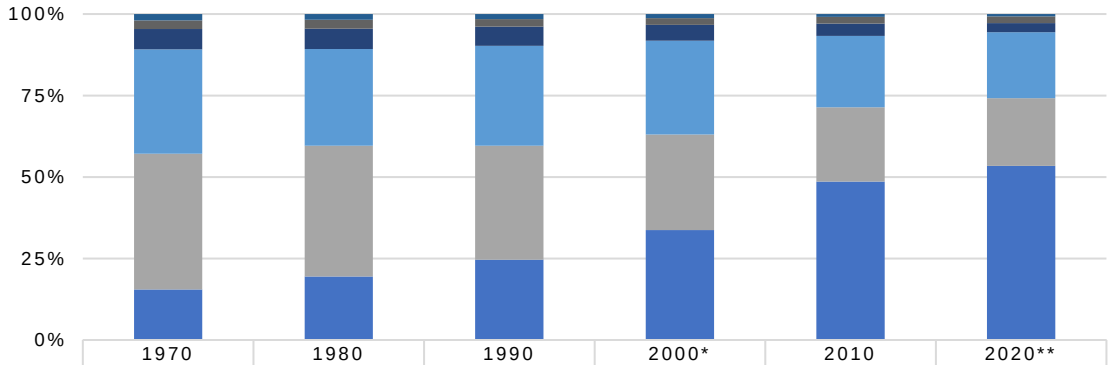
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was 15.7%. Towards the end of that period, there was a higher proportion of 17.2%. However, when we analyzed the continents separately, different behaviors were observed; these reflect the existence of a new international division of labor (NIDL), which stems from the initiative of advanced countries, in transferring part of their industrial park to peripheral countries in the form of global production (or value) chains.

However, GVCs are heterogeneous in terms of their geographical position (Baldwin, 2012; Boddin, 2016; Estevadeordal, Blyde e Suominem, 2013; Meng, Ye e Wei, 2020; Rungi e Prete, del, 2018). On the one hand, in traditional regions with advanced industrialization (Europe and North America), there was a slight reduction in the share of manufacturing in total value-added. On the other hand, the Asian countries significantly increased their share, whilst there was a significant reduction in countries in South America, Africa, and Oceania.

In this context, it is expected that each continent has changed its contribution to world manufacturing between 1970 and 2020. This is confirmed in **Figure 3**.

Figure 3 - Share of the continents in the value-added of world manufacturing: 1970-2020



	1970	1980	1990	2000*	2010	2020**
Oceania	1,9%	1,7%	1,6%	1,3%	0,8%	0,7%
Africa	2,6%	2,8%	2,3%	2,0%	2,1%	2,0%
South America	6,2%	6,2%	5,9%	4,8%	3,8%	2,8%
North America	32,0%	29,7%	30,6%	28,8%	21,9%	20,2%
Europe	41,6%	40,1%	34,9%	29,3%	22,8%	20,7%
Asia	15,5%	19,5%	24,7%	33,7%	48,6%	53,4%

Source: Elaboration of the authors, based on data from http://data.un.org/
* China data initiate in 2004.
** Only the year 2020.

At the beginning of the period, manufacturing activities in Europe (41.6% of the total) and North America (32.0% of the total) produced almost all the value-added of the sector in the world. Between 1970 and 1990, a sharp reduction in Europe's participation in world manufacturing was observed; during the same period, there was not a severe reduction in North American participation, however. Despite the low contribution to world manufacturing, South America and Oceania also showed a sharp reduction during this

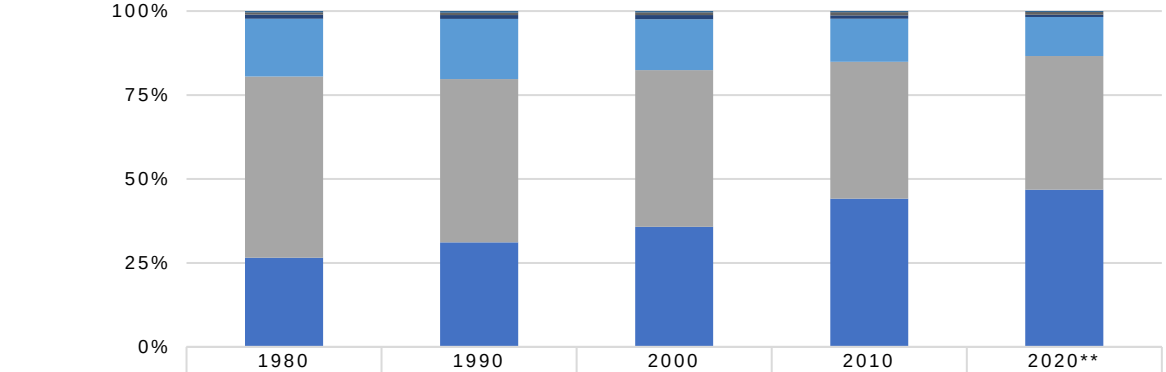
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period. Africa also showed a slight reduction in the contribution to world manufacturing value-added. In the 2000s, Asia became the continent that produced the most manufactured goods in the world; in the 2010s, Asia produced more than twice what Europe produced; and in 2020, Asia produced 53.4% of the world's manufacturing value-added.

The data presented indicate the share of each continent in the world manufacturing value-added, which gives an idea of the 'compartmentalized' evolution of world manufacturing. However, to contextualize these transformations and connect this to the new international division of labor, **Figure 4** presents the share of each continent in the world's exports of manufactured goods (Iron and steel; Chemicals; Machinery and transport equipment; and Textiles and Clothing).

The main observation is the reduction in the proportion of contribution that each continent provided in the total export of manufactured goods, except for Asia. The biggest reduction occurred in Europe, a continent that accounted for more than half of total world exports in the 1980s. This is reflective of both exportations among European countries and to countries outside the continent. In 2020, Europe exported 39.8% of the total manufactured goods in the world. The birthplace of industrial capitalism was surpassed by Asia in the 2010s when it reached 44.1% of the world's manufactured exportations. In addition to China, South Korea, and Japan, the trade agreements established by the Association of Southeast Asian Nations (ASEAN) stands out.

Figure 4 - Share of the continents in global manufactured exports: 1980-2020



	1980	1990	2000	2010	2020**
Oceania	0,4%	0,5%	0,4%	0,3%	0,3%
Africa	0,7%	0,7%	0,8%	1,0%	0,8%
South America	1,2%	1,1%	1,2%	1,0%	0,7%
North America	17,2%	17,9%	15,2%	12,8%	11,6%
Europe	54,0%	48,6%	46,7%	40,8%	39,8%
Asia	26,6%	31,1%	35,8%	44,1%	46,8%

Source: Elaboration of the authors, based on data from https://stats.wto.org/
** Only the year 2020.

Figures 1-4 show a geographical shift in manufacturing production, but not its disappearance through supposed post-industrial capitalism (as a totality). In other words,

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deindustrialization is not a systemic problem, but something limited to certain spatial amplitudes. Therefore, even in advanced countries, where technology- and knowledge-intensive services have gained prominence in the economy's dynamics, manufacturing activity is strictly necessary to the process of reproduction of the social capital, in terms of value and, mainly, in terms of the use-value.

As such, the role of manufacturing in the dynamics of capitalism as a global system (transnational), remains essential regardless of the place (territory) where the production process takes place. Before analyzing the logical-historical development of industrialization and deindustrialization (and their relation with the international division of labor), we must observe and understand the theoretical definition of these phenomena.

INDUSTRIALIZATION AND DEINDUSTRIALIZATION: A CONCEPTUALIZATION PROPOSAL

Industrialization and deindustrialization cannot be conceived as nonhistorical manifestations. In 'The Capital' (Book I, part IV), when discussing the evolution of the division of labor in capitalism, Marx (2010a) revealed two fundamental and articulated processes required for this system. First, the transformation of cooperation in the fundamental form of organization of production process, subordinating and appropriating the 'collective power of masses' as if it was derived from the capital itself. Second, the change in the technical division of labor, from simple cooperation to manufacture and later to the so-called 'Machinery and Modern Industry', which is the phenomenal manifestation of industrialization as we conceive[2].

In this context, to analyze theoretically the industrialization and deindustrialization phenomena, we must seek to achieve their essence[3] and their content[4], as these attributes are fundamental to understanding the different forms that a phenomenon can assume[5]. This was discussed in the following sections.

Phenomena and their essences

Following on from the exposed, in Marxian economics it is understood that the industrialization *phenomenon* is the widespread process of relative reduction of the use of human labor via the mechanization of production processes. In other words, the establishment of the modern machine industry expresses the *appearance* of industrialization. In turn, as was pointed out by Tregenna (2013), this is typically achieved through the intentional application of science to progress labor productivity. Contradictorily, replacement labor by machinery depends on 'The accumulation of knowledge and skill' achieved by 'the general productive forces of the social brain', which create new means of production and seek to implement the most appropriate ways to organize and manage them (Marx, 2010a).

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Based on the above, the *essence of industrialization* will be defined as the constitution – in a geographically delimitated space – of productive forces in such a development stage where the social process for production and reproduction of use-values happens by the widespread use of mechanized means of production[6].

Thus, the industrialization phenomenon is structured as the implementation of a complex and interdependent production chain which can produce and reproduce pogoods and services that society needs to consume (directly and indirectly), i.e., industrialization conforms to the factory system. Once this level is reached, the return of a generalized production based on the old form (e.g., handcraft or manufacture stage) becomes unlikely or impossible. This happens because there are production processes only viable through the modern machine industry, as most factory systems require a large production scale that only it can provide[7].

After defining the essence of industrialization, we can define the essence of deindustrialization.

We must comprehend that *deindustrialization* appears as a *phenomenon* when there is a reduction in the importance of the factory system – in a geographically delimited space – in the generation of the elements necessary for maintaining society and, consequently, for the dynamic of economic activity. Deindustrialization can therefore result in job loss, reduction in manufacturing value-added as a percentage of GDP, increase in imports and decrease in exports of manufactured goods, etc. These are symptoms indicative of the reduced productive capacity of manufacturing in dynamizing the whole economy.

Thus, a country which is currently de-industrializing certainly had, in the past, a factory system capable of creating most of the commodities to be consumed, but, for various reasons, they ceased to do so. Therefore, the essence of *deindustrialization* of a geographically delimited economy is defined as the loss of capacity to produce and reproduce, through modern machine industry, a significant part of the manufactured products needed for its sustainability.

The degree of industrialization or deindustrialization of the economy – in what we call the *technical aspect* – influences economic activity in the two following ways. First, in the dependence on foreign production to supply their means of consumption and means of production, a result that can be seen in the trade unbalance. Second, regarding the use of internal productive forces, which is observed through the relative levels of production and employment of the manufacturing in the whole economy. Thus, it is possible to use these indicators to verify the degree of industrialization or deindustrialization of an economy.

However, this technical (apparent) aspect of the phenomenon, although necessary, is still insufficient for us to understand the *content* of deindustrialization.

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The contents of industrialization and deindustrialization

To construct the concepts of industrialization and deindustrialization, in addition to understanding the *essence*, we must also identify the *content* of these phenomena. It is necessary to explain the diverse elements involved in their characterization and differentiation. Starting with industrialization, in order to argue about deindustrialization, we need to understand that the general concept of industrialization must be associated with a certain degree of development of productive forces. In turn, the dynamics of productive forces' progress are not random, deterministic, or linear. It is essential to understand that the development of the productive forces and, hence, industrialization are subjected to specific relations of production and the social laws of a given mode of production.

It is known that the productive forces and the relations of production are related as content and form, respectively, in the concept of mode of production. One of the properties of this relationship is that, although the form has relative autonomy in relation to the content, it is one of the functions of the form (relation of production) to contribute to the development of the content (productive forces) (Afanassiev, 1963, 1982; Rosental, 1951; Rosental e Straks, 1960). This means that the social relations of production, by meeting the unceasing development of productive forces, outline the path of technological progress and determine the character and *form* of industrialization.

In this context, from definition of the *essence* of industrialization, we must comprehend industrialization as a phenomenon that occurs under specific social laws, derived from certain relations of production. The laws originated from social relations of production are responsible for the establishment and dynamics of the factory system, defining the general *content* to give *form* to several different types of industrialization: original or late, capitalist or socialist, advanced or dependent[8].

When discussing industrialization under the conditions imposed by the relations of private property of the means of production, mercantile distribution of production, and wage labor, we are referring to the historically reported industrialization, i.e., the *capitalist content* of the *industrialization* phenomenon. Thus, this will be subjected to laws inherent to the process of permanent valorization of capital.

Mello (1982) stated that '*Capitalist industrialization, therefore, must be comprehended as the process of capitalist productive forces constitution, more precisely, as the process of moving to the specifically capitalist mode of production*' (p. 97). A similar point of view was reported by Silva (1986), who stated that '*It is necessary to consider industrialization itself* [...] *as a social process, and more precisely, as the technical aspect of the development of certain relations of production, as well as, the development of productive forces adequate to certain relations of production, i.e., the capitalist relations of production'* (p. 14).

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From this, the *content* of *capitalist industrialization* is identified as the establishment of productive forces in the machinery stage, through the laws of the capitalist mode of production. These laws force capitalists to reproduce their capital on an extended scale and, by considering that *'the development of the productivity of social labour becomes the most powerful lever of accumulation'* (Marx, 2010a, p. 432), this typically occurs when there is technological progress. Thus, capitalist industrialization must be comprehended as the establishment and development of mechanized productive forces capable of addressing the general law of capitalist accumulation, especially the reproduction of social capital on an expanded scale with the increase in the composition of capital[9]. This, however, must arise from the internal conditions of valorization[10], whether these conditions are subordinated in the hierarchy of the world economy.

In turn, the establishment of industrial capital, as defined by Marx (2010b), is not the sole determinant condition for industrialization to exist. As capitalist forms of production came from simple co-operation, which underwent to manufacture, and eventually arrived at the factory system, it cannot be said that in all these cases industrialization, as defined here, had occurred. Industrialization will only happen when the productive forces of a given location assume the generalized form of modern machine industry, that is when there is a generalized process of producing machines through machines, ranging from the production of means of production to the production of means of consumption.

At this point in the argument, although it seems obvious, it is necessary to explain that industrialization and deindustrialization are phenomena specifically related to the manufacturing form of industrial capital. From the Marxian economic theory, the concept of industrial capital is defined as the capital-value that assumes the functional forms of money, commodity, and productive capital (Marx, 2010b, p. 29). However, it is necessary to reduce the level of abstraction and to expand this definition, specifying the type of use-value created by a certain (surplus) value-producing activity. The reason is that each concrete labor that generates a certain use-value is carried out by specific means of production and through labor powers with specific qualities. Therefore, each concrete form of industrial capital, either agricultural, mining, or manufacturing, will influence the general process of reproduction of the capital in each society differently. Then, as argued by the literature, manufacturing has the greatest power to drive the process of capitalistic development of the productive forces, even when knowledge-intensive business services (KIBS) assume, apparently, the lead of technological progress (Berardino, Di e Onesti, 2021; Ciriaci, Montresor e Palma, 2015; Ciriaci e Palma, 2008, 2016; Szirmai, 2012; Tregenna, 2013, 2018).

From what has been argued, two elements, which need to be recognized to understand the *content* of industrialization, were identified: 1) the *technical aspect*, which is derived directly from the productive forces and is linked to the immediate production of use-values; 2) the *social aspect*, derived from the social relations of production, which determine the

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laws that govern the dynamics and development of the technical aspect, and, in capitalism, is subjected to production and appropriation of (surplus) value.

On the one hand, *industrialization* is the rupture of the technical barriers that prevent the full establishment of a factory system that guarantees the development of the capitalist mode of production in a certain territory. On the other hand, the process of *deindustrialization* should be understood as the loss of capacity to maintain manufacturing production and reproduction of materials necessary for the self-determination of the process of capital accumulation in a certain territory. As with industrialization, the manifestation of deindustrialization is not a simple process – it must emanate from the economic laws that govern the geographical space. The deindustrialization of a capitalist economy must be seen as a result of the dynamics inherent to a joint process, where the following: the extraction of surplus value; the imperative of competition; the constant revolutionizing of the productive forces; and the expansive and totalizing logic of accumulation.

In this context, we define the *content* of *deindustrialization* as the retraction of the factory system, resulting from the laws that govern the capitalist mode of production, to the point of interfering in the expanded reproduction of the social capital and, consequently, in the self-determination of the general law of capitalist accumulation in a territory. This phenomenon represents a disassembling of industrial productive chains motivated by endogenous factors to the valorization conditions faced by an economy, either subordinated or not to other countries in the hierarchy of world capitalism. However, this does not mean that the essence of the laws governing capitalism changes with the advent of deindustrialization, i.e., the content of the general law of capitalist accumulation remains. Our argument is that deindustrialization is a process that leads to changes in the form that these laws manifest themselves. Our hypothesis is that, in the past, the dynamics of capital accumulation were under specific forms that guided the national capitalist development under the leadership of the domestic modern machine industry. Although, these forms became an obstacle to the general process of capital accumulation and since then, new concrete forms of valorization (in all spheres of capital activity) were then established. This argument is in accordance with Tregenna (2014), who argues that deindustrialization is the result of the relative reduction of manufacturing and the relative ascension of other economic activities, whether they produce surplus value or not, in the dynamization of a particular economy.

As will be discussed in Section 4 below, regarding the changes in the contemporary capitalism, the productive capital no longer needs the geographical concentration in certain territories and the verticalization of the production chains. Until last century, this happened in central economies (and in some peripheral countries), where the development of productive forces shared the same space of use (almost) exclusive for advanced technologies. Nowadays, this is no longer a necessity for capitalism (as a world system of

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transnational order). Therefore, beyond the purely logical analysis of the phenomena of industrialization and deindustrialization, it is necessary to understand how both have been historically established. With this, we can answer the following two questions: i) how a capitalist economy that has reached the level of an industrialized economy could de-industrialize itself and lose a considerable part of its source of use-value and (surplus) value? ii) How, historically, capitalism laws caused this contradictory movement?

ACCUMULATION IN A LOGICAL-HISTORICAL PERSPECTIVE AND THE CAUSE OF DEINDUSTRIALIZATION

History shows that the development of social productive forces – until reaching the factory system stage – occurred under the laws of the capitalist mode of production. However, as each country occupies a relative position to others within the hierarchy of the world economy, the establishment of this productive structure presented several particularities.

The first economies that could develop productive forces, credit and commerce systems, and concentrate and centralize capital, were those which formed the core of world capitalism. These nations became the vanguard of capital accumulation and elevated the material elements of production to the manufacturing level, subsequently resulting in a factory system. In turn, the economies that conformed to the capitalist mode of production without endogenizing these abovementioned prerequisites formed the periphery of world capitalism. Due to the low level of capitalist development, especially in social productive forces, the development of these economies is conditioned by the development of central economies[11].

These are the fundamental elements that led to the emergence of capitalist industrialization and the international division of labor (IDL). Before analyzing the role of IDL in the deindustrialization process, it is necessary to analyze the history of some microeconomic aspects of industrialization.

Capitalist industrialization

Capitalist industrialization has manifested itself in three different forms throughout history – the early British industry, the multidomestic-Fordist industry, and the global industry based on value chains. In each historical moment, industrialization was accompanied by specific characteristics, according to the degree of development of the productive forces and the underlying type of social relations of production.

The early British industrialization was characterized by British hegemony in the context of interstate relations and the success of its manufacturing (textiles) and commerce (finance and transportation) up to the end of the 18th century. The pioneering of its bourgeois

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revolution, the mercantile character of its aristocracy, the depth of banking systems, and the territorial dimension of its empire – base for primitive accumulation of capital – created the necessary conditions for the mechanization of textiles production and for the capital investment in the factory system (Hobsbawm, 1999).

The energy (coal) and transportation (railways and steamships) revolutions allowed the capital to expand the market and shorten distances for the travel of commodities. The subsumption of labor to the factory system and the need for commodities transportation required the construction of essential urban and logistic infrastructures fundamental for the increase in turnover and the expanded reproduction of capital. British industrialization changed the international economic order by subjecting the rest of the world to trade patterns supported by comparative advantages and allowing Great Britain a prime position as a global military, technological and financial epicenter (Oliveira, 2003).

Nevertheless, the technological characteristics of early British industry were replicable since they relied more on tacit knowledge than on scientific advances. In general, the administration of industrial capital was familiar, leading to poor management in terms of profitability and efficiency. Whether for these reasons or for the external investments made by Great Britain throughout the 19th century, by financing railways around the world, some countries with deeper monetary and market circuits (such as the United States, France, and Germany) were able, from the second half of the 19th century, to assimilate the British technological standard and carry out their own industrialization process (Mazzucchelli, 2009). This period was discussed in an expressive part of Marxist literature as the era of competitive capitalism (Lenin, 2008).

The multidomestic-Fordist industrialization was the result of two movements in the American economy. First, the institutional and technological assimilation from the great British industry; and second, the organizational, scientific, and technological revolutions observed in America in the last quarter of the 19th century. The attraction of British engineers, the absorption of British capital in railway financing, the expansion of the geographical frontier, the innovations, the attraction of immigrant labor, and the adoption of protectionist policies in the manufacturing industry after the Civil War contributed to the acceleration of USA industrialization. In addition, the boom of innovations in the chemical, energy, metallurgical, and transportation sectors amplified the development of US productive forces (Saes e Saes, 2013). The inception of electricity and combustion energy, the use of new means of transport, such as automobiles, the introduction of steel, and the use of chemicals, all contributed to the increase of labor productivity and to the diffusion of mechanization in all productive sectors (including agriculture). These factors also created profitable niche markets for means of consumption such as cars, furniture, and electronics.

Contrary to early British industrialization, the technical and organic composition of capital in the multidomestic-Fordist industry was in another qualitative baseline, substantially superior (capital-intensive sectors). Consequently, the volume of investments in these

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sectors presumed greater centralization of capital and more intensive use of science and technology. The concentration of banking, the formation of anonymous societies, and the expansion in stock exchanges were essential for the centralization of monetary capital necessary for investments in these large-scale enterprises (Oliveira, 2003). In addition, technological transformations became rationalizable, and (Schumpeterian) individual innovators were quickly replaced by larger corporations' scientific investments.

The technical, financial, and organizational characteristics of the multidomestic-Fordist industry were highly concentrated business and market structures (Chandler, 1990). Companies that first increased investments in the sufficient volume necessary to achieve scale (reduction of unit costs) and carried out hierarchical, departmental, and rational mechanisms of organizational management, managed to obtain the control, relative or absolute, of their respective markets. They were therefore able to invest and control networks for the supply and distribution of inputs and products (backward and forward integration), as well as to determine consumption patterns and impose the desired price level. The expansion of the mass and rate of surplus value allowed the capital to diversify its operations and create conglomerates in different productive and financial areas and sectors. Marxian literature understands this industrialization pattern as the phase of monopolistic/financial capital (Lenin, 2008).

The degree of complementarity and the technological and productive attributes of the multidomestic-Fordist industry have made the national market its main locus of valorization and accumulation (Aglietta, 1979). The interdependence between the extractive (ores and oil), intermediate and capital goods (metallurgy, mechanical and electrical components), durable goods (cars, appliances, and electronics), non-durable goods, energy (electricity and combustion engine), transportation, and civil construction industries, ensured high rates of accumulation and realization, either as a function of investments or based on capitalist and working-class consumption (Coutinho e Belluzzo, 1979).

The multidomestic-Fordist industry was characterized, therefore, as being highly concentrated, compartmentalized, hierarchical, vertical, and horizontally integrated, focused on the domestic market, and directed to investments and long-term gains, given the greater distance between managers and shareholders (Porter, 1986). In turn, the foreign direct investments made in the second half of the 20th century contributed to the universalization of the American technological and productive standard around the world, especially in advanced capitalist countries and in some peripheral countries, replicating, according to Porter (1986), the same governance structure and the same departmental subdivision in each country. Multinational corporations had a high degree of autonomy and discretion over management, logistics, and marketing processes, given the preponderance of the national locus in the accumulation of capital.

The universalization of the American way of life post-WWII was the beginning of the rise of competition and global industry (Furtado, 1981). The technological assimilation of the

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American productive structure was carried out by countries such as France, Japan, Germany, England, and Italy, concomitantly with the expansion of US foreign direct investments and greater commercial and financial integration between capitalist countries, especially among those economically advanced. On the one hand, the United States contributed to the economic strengthening of the former economic powers affected by WWII – through loans, technology transfers, financial constraints, and preferential trade agreements. On the other, the development of the Bretton Woods monetary and financial system and the successive rounds of tariff reduction promoted by GATT contributed to the resumption of synchronous global economic growth between 1950 and 1974, based on a common consumption and technological pattern (Pereira, 2022).

The competition between large corporations has intensified, primarily, by the internationalization of US capital on European territory. The response of European countries to America's challenge was to stimulate – with the support of the State – the concentration and centralization of European capital (formation of large national groups) and begin its internationalization (Servan-Schreiber, 1967). The result was the internationalization of inter-capitalist competition, given the cross-border expansion of multinational corporations. Japan, in turn, adopted the strategy of conquering foreign markets through exportation, given the exchange rate and labor advantages of that time (Medeiros, 2006). Amongst the consequences of increased inter-capitalist competition, the deterioration of the American industrial structure, as a result of its high trade deficit since the 1970s, stood out.

The 1970s were a crucial turning point towards the formation of the global productive chains (global value chains). The 1970s were characterized by structural crises engendered by the exhaustion of the multidomestic-Fordist accumulation regime, the rise of globalized finance, and the antagonism between national economic systems and the formation of the global market (Coutinho e Belluzzo, 1979). Increased rates of inflation, high production costs (inputs and salaries), the reduction of the economic growth rate in central countries, and the ascension of more profitable, liquid and speculative forms of valorization of capital (financialization) significantly reduced the profitability of multinational corporations based on the multidomestic strategy (Chesnais, 1997; Lazonick e O'Sullivan, 2000).

Japan was the first country to internationalize and outsource its production structure (to Southeast and East Asian countries) in response to the factors mentioned regarding the multidomestic-Fordist industry, especially by valuing its currency in successive agreements between itself and the United States (Porter, 1986). Japan continued exporting to the U.S. market and adjusting production plants to new macroeconomic environments (low and volatile growth). In response, the USA intensified the incorporation of the new management practices established by increased flexibility, mobility, instantaneous adjustment, and maximization of the shareholder value via the maximization

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of dividends (Crotty, 2002; Lazonick e O'Sullivan, 2000). European corporations, notably the German ones, followed these new business models by expanding into Eastern Europe economies.

A common consequence of the process of internationalization and outsourcing of the productive structure in advanced capitalist countries was the development in East Asia (first- and second-generation Asian tigers) of assembly and supply networks of electronic parts and components (Sturgeon, 2002). Technological revolutions in the field of telecommunications and microelectronics contributed to the creation of the organizational infrastructure necessary to support this process. Over time, subcontracted companies created their own supply networks (intermediate and capital goods), making them more complex (Borrus, 1997). The success of these networks promoted large changes in the accumulation pattern and organizational structure of globalized corporations.

Industrial corporations have de-verticalized and become leaner as they began to focus on actions capable of providing them greater competitive advantages (innovation, financing, design, marketing, advertising, brand promotion, and after-sales). They outsourced production and assembly and set up mechanisms for coordinating geographically dispersed activities (Gereffi, Humphrey e Sturgeon, 2005; Hiratuka, 2010). Moreover, they supported governments and economic policies that promoted economic openings (neoliberal policies) necessary for the global circulation of capital and control of the process of allocation, valorization, and accumulation of capital.

The contemporary manufacturing structure became global, and the production scales became transnational. Global export platforms have risen, and the participation of intra-firm trade and intermediate goods became a major factor in international trade. The dispersion of the production process between different countries according to levels of production and appropriation of value has become the productive pattern of globalization. A few peripheral countries – especially in East Asia – have managed to internalize the production of intermediate and final industrialized goods. However, the technological, financial, and distribution channels carried out by advanced capitalist countries allowed these to appropriate the largest share of the value produced by the global industry, in the form of profits, interest, and dividends (Hiratuka, 2010; Milberg, 2008).

Capitalist deindustrialization

From the discussions carried out so far, we can point out the new international division of labor (NIDL) as one of the main social results of the actions of individual capitals (occidental ones, especially US) that aimed to survive amid the profitability problems manifested from the 1970s structural crisis. The new world economy has seen profound changes in the participation of each country in international production of merchandises. As we have seen, parts of the production process of companies that originated in the central countries were transferred to peripheral countries, transforming them into factories

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of those, inaugurating the period of globalized production chains (Charnock e Starosta, 2016, p. 3).

Three necessary conditions pointed out by Fröbel et al., (1978) were indispensable to the formation of the NIDL: 1) the formation of an industrial reserve army on a global scale, which, in the form of latent overpopulation in rural areas and 'ex-socialist' countries, has become an 'inexhaustible' source of cheap, skilled, disciplined and well-adapted labor power (pp. 126-7); 2) the development of means of communication and transportation, which made logistic problems less dependent on geographical space (pp. 127-8); and 3) the creation of organizational and technological factors that allowed the fragmentation of the production process in elementary activities of quick and easy training (not necessarily qualification) of workers (pp. 128-9). As the authors also argue, combined with these material prerequisites, a set of institutional rearrangements was introduced, reflecting the structural changes of capitalism, and creating what later became known as the Washington Consensus. These neoliberal policies are indispensable to the fragmentation and globalization of the production process (Gereffi & Sturgeon, 2013; Kowalski et al., 2015; Stephenson, 2013).

Capitalism has resulted in two global markets: the market for products and the market for labor power (Fröbel, Heinrichs e Kreye, 1978). Industrial capital has increasingly expanded the possibilities of extra profits, as technological advances have allowed the rationalization, fragmentation, and reorganization of production in various parts of the world, and the formation of a global relative surplus population, which has drastically reduced the costs of variable capital[12]. Regarding reducing costs with circulating capital, this is a differentiating aspect of the NIDL compared to the old one. If before the cheaper constant circulating capital was brought from the periphery for productive consumption in the core countries, now, given the limitations to the mass migration of cheaper variable circulating capital[13], the productive capitals of more advanced technology, which functioned predominantly in the central economies in the old international division of labor, started to function also in the periphery in the NIDL.

The primary change from this process was the fact that, for the first time in history, the production and processing of finished and semi-finished products began to be competitive and profitable in the periphery of global capitalism. The production of 'technological' goods in those countries means that they have the capacity to compete internationally in some sectors. Therefore, there has been a profound change in the former division between the central industrialized countries (which supplied most of the manufactured products) and the peripheral countries (which were just suppliers of raw materials) (Fröbel, Heinrichs e Kreye, 1978).

This new configuration of the productive sphere of valorization of capital on a global scale transformed the role of each geographical space in the production and commercialization of merchandises. On the one hand, most of the regions that were once seen as major manufacturing centers ceased to be so, which reduced the importance of the factory

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system in their accumulation process. On the other hand, a large part of the manufactured goods consumed in the world began to be produced in countries where primary activities prevailed before, especially, to supply the core of the capitalist system. However, the establishment of the NIDL did not completely abolish the old international division of labor. Many peripheral countries remained as raw material suppliers. However, economies that did not participate in the old IDL became part of the NIDL through globalized production chains, which, of course, aim to reduce the costs of transnational companies with circulating capital (Fröbel, Heinrichs e Kreye, 1978).

From the above, we can say that the social transformations spontaneously created by multinational corporations, as personifications of the necessities of capital, i.e., in their pursuit of a greater amount of surplus value and their survival in the face of competition, led to a revolution in social productive forces (which manifested itself, among others, as a central element in the structural crisis of the 1970s). Thus, this revolution guided by the laws of capital was the *essential cause*[14] of *capitalist deindustrialization*. In turn, the productive forces which were organized according to the global industry based on value chains and the consequent formation of the NIDL, in the form of global production chains, are indeed the *internal cause*[15] of deindustrialization. Since individual capitals have transferred part of their production outside national borders, this has resulted in the retraction of the factory system in industrialized countries, causing deindustrialization.

From the aforementioned arguments, it may be presumed that the mere development of the productive forces (without considering the relations of production) was the essential cause of capitalist deindustrialization. This presumption is in accordance with the so-called ‘positive deindustrialization’, which considers this phenomenon as a ‘natural’ result of economic development. However, the history shows that deindustrialization results from the capitalist development of existing productive forces, and it represents the rupture of a limitation imposed by ‘multidomestic industry’ to the continuous expansion of capitalist accumulation. Considering the development of social productive forces achieved in the 1960s and 1970s and the resumption of capital competition in imperialist countries reconstructed in the post-WWII era, the production of use-values and the search for surplus value started being organized in an integrated way and on a global scale. These are the historical elements of the capitalist deindustrialization process that led to the retraction of the factory system of economies submitted to the capitalist mode of production.

It is important to highlight here the fact that these changes did not result from major agreements between the bourgeoisie segments from the imperialist countries. This was a spontaneous but not anarchic movement, driven by three connected elements of capitalism since its origin: a) the general law of capitalist accumulation, which remains valid, but in new concrete forms; b) the search for technological progress, which remains the main vector of capitalist development; and c) extraordinary surplus value, which is still the object of desire of all individual capitals. This is precisely what, through the individual

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actions (of the parts) governed by the economic laws of this production mode, led capitalism (as a totality) to present its current face as a social result.

In summary, we suggest that the function of industrial capital until the last quarter of the last century and the consequent IDL, were themselves an obstacle to the development of capitalist accumulation. The limit of this form of organization on the productive valorization of capital first began in the 1970s and was one of the elements of the structural crisis triggered during this period. Thus, it was necessary for capitalism as a system (especially, occidental companies) to find new forms of organizing the production process, so that the general law of capitalist accumulation continued to be fulfilled and, consequently, it remained the dominant economic system in the world. The concrete elements in the core of the structural crisis changed the form, but not the content of capitalist accumulation. From the aspects we have analysed here, deindustrialization resulted from the change in a central concrete element of the dynamics of capitalist production, which no longer placed importance on domestic manufacturing, and began to be based on other ways of obtaining value (also in other spheres of valorisation and forms of appropriation on an international scale) and use-values (industry based on global production chains and NIDL).

FINAL CONSIDERATIONS

We adopted the idea that traditional views on deindustrialization cannot overcome the limits of this phenomenon's appearance. Therefore, this study sought to conceptualize more accurately, from the perspective of Marxian economic theory, the concept of deindustrialization. From what has been presented throughout the text, we are able to make some complementary considerations on this subject.

The first is the fact that both industrialization and deindustrialization are historically determined phenomena. Far from expressing a natural result of economic development or wrong policies, as traditional literature says, such phenomena result from the functioning of the social laws of the capitalist mode of production. The development of capitalist accumulation led to the installation of industrialization, although, capitalist accumulation also led to a process of deindustrialization.

As a central element in the crisis and the structural transformations manifested since the 1970s, capitalism has undergone profound changes in its productive structure. These involved not only those central countries, but also the peripheral ones. The 1970s marked a turning point in the international division of labor since its classical form was changed. In the old IDL, the central countries were major suppliers of manufactured products worldwide, and the peripheral countries, with exceptions, occupied the position of main suppliers of raw materials and lower value-added manufactured products. In this context, global productive chains have emerged as a form of the new IDL, which directs the most profitable activities in order to preserve them at the core of global capitalism, while those

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linked to the immediate production process are carried out partially in the periphery, as (Starosta, 2010) theorizes and exemplifies for the case of the electronic industry. As a result, some sectors of peripheral countries, especially in East and Southeast Asia, started to have characteristics once seen only in advanced countries – they became relevant exporters of medium-high and high-tech manufactured products.

Nevertheless, world capitalism is structured as a hierarchical order, in which a few countries are at the top. Consequently, it would be expected that concrete phenomena will manifest themselves in singular dimensions, depending on the specificities of each economy, which, of course, are subject to mediations put by the general foundations of the world economy. Naturally, assuming the validity of the law of unequal and combined development and its functioning on the economies inserted in world capitalism, it is expected that the changes in contemporary capitalism reach, in a different way, the nations that occupy different positions in the hierarchy of the world system. For example, the recent case of Chinese industrialization may represent a situation in which multidomestic-Fordist industrialization has prevailed, even though it has begun this process as the 'factory floor' of the global value chain-based industry. This is a strategy known as 'in-out-in' (Andreoni, Lee e Torreggiani, 2021), where peripheral countries are part of the global value chains, acquire know-how and development capacity, withdraw to perform the technological catch-up and re-insert themselves in the GVCs, now as a protagonist. In addition to China, the authors point to South Korea as another case of success.

In conclusion, and as a suggestion for subsequent works, it is necessary to analyze what would be the forms that the industrialization could assume and, mainly, the deindustrialization in economies in different positions in the hierarchy of world capitalism. Such analysis may bring to light new questions which will aid in the understanding of the current law of unequal and combined development of capitalism.

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[1] The association of international commerce with de-industrialization has been a theme in several studies (Alderson, 1997, 1999; Autor et al., 2013; Boulhol & Fontagné, 2006; Kollmeyer, 2009; Kollmeyer & Pichler, 2013; Kucera & Milberg, 2003; Palma, 2005; Pierce & Schott, 2016; Rowthorn & Coutts, 2004, 2013; Rowthorn & Ramaswamy, 1999; Rowthorn & Wells, 1987; Saeger, 1997; van Neuss, 2018; Weiss & Tribe, 2015; Wood, 1994, 1995).

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[2] 'The development of the means of labour into machinery is not an accidental moment of capital, but is rather the historical reshaping of the traditional, inherited means of labour into a form adequate to capital. The accumulation of knowledge and of skill, of the general productive forces of the social brain, is thus absorbed into capital, as opposed to labour, and hence appears as an attribute of capital, and more specifically of *fixed capital*, in so far as it enters into the production process as a means of production proper. *Machinery* appears, then, as the most adequate form of *fixed capital*, and fixed capital, in so far as capital's relations with itself are concerned, appears as the *most adequate form of capital* as such' (Marx, 2015, p. 616).

[3] For Rosental and Straks (1960): 'Essence is the relatively stable inner aspect of objective reality, which remains hidden behind the phenomena surface and manifests itself through them. The phenomenon is the most mobile and changeable external aspect of objective reality, which constitutes the form of manifesting the essence' (p. 55). 'The essence expresses something universal, while the phenomenon reveals something singular; in essence, the inner aspect of reality is presented, while the phenomenon is shown in the external aspect; the essence is more stable, inert and constant; however, the phenomenon is distinguished by its mobility and mutability; the essence manifests itself through the phenomenon, to the extent that it presents itself directly and immediately' (p.62).

[4] 'In the objective world, content is the inner aspect of objects. This aspect represents a set of elements and processes that form the basis of the existence and development of things. The form is the organization and the structuring of the content. In phenomena, which belong to the sphere of knowledge, form is the expression of the content'. (Rosental e Straks, 1960, p. 197)

[5] Afanassiev (1982) defines content and form, and essence and phenomenon as follows: 'the content corresponds to all the elements and processes that form the object, while essence is content's aspect [...] main, internal, relatively stable' (p. 137). In turn, 'The form is the structure or organization of the content' (p. 132) and 'A phenomenon is the external expression of the essence' (p. 138).

[6] Although industrialization has emerged as a capitalist phenomenon, this definition allows us to speak of industrialization in general, without specifying a particular society. In another footnote, after defining the content of industrialization, we will briefly mention how this same essence, alongside other elements, can help to analyse industrialization in modes of production other than capitalism.

[7] This does not mean that those other ways of organizing the production process cease to exist, although, they will be secondary compared to the machine-factory system.

[8] At this moment we can discuss industrialization in modes of production other than capitalism, each one following the laws determined by specific relations of production, as occurred in the USSR.

[9] Ribeiro (1988), when analyzing the capitalism formation in Brazil, argues that this is a necessary condition for both the maturation of this mode of production and the manifestation of a phenomenon typical of industrialized capitalist economies - cyclical crises of overproduction.

[10] These internal conditions do not correspond simply to a certain geographical space, but to the dynamics limited to capitalist laws and the conditions of existence and integration of that national economy into the world economy. They are, therefore, endogenous conditions to the process of capitalist accumulation of a particular national economy.

[11] This does not mean that peripheral economies are absolutely subordinated to the development of central economies. Each country (regardless of being a central or peripheral economy) has some degree of relative autonomy, derived from the characteristics of the economic-social formation that constitutes it. This means that there is a set of internal (domestic) components that outline their capitalist development, that is, the historical facts that constituted the nation. However, the capitalist relationship between the centre and the periphery is a relationship of mutual and uneven connection which is structurally dominated by the economies with greater development of the capitalist productive forces. Thus, the hierarchy of the capitalist system is essentially dominated by central economies.

[12] The advances in information and communication technologies have made it possible, while low wages have made globalized production chains profitable (Baldwin, 2013).

[13] Impossibility created by economic, social, ethnic, racial, and some other discriminatory reasons.

[14] 'Dialectical materialism distinguishes between essential causes – determinant, decisive – and non-essential – accessory, secondary – of a phenomenon. The essential causes of qualitatively determining phenomena are, first, those without which these phenomena could not occur and, secondly, the causes that determine the necessary general characteristics for these phenomena. [...] The action of non-essential causes is limited and subject to the action of essential causes' (Rosental e Straks, 1960, p. 107).

[15] '[...] when studying concrete phenomena, internal and external causes must be distinguished. We call internal causes those that act on the object itself and have been growing throughout its development and

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surge during it, according to its specific quality [...] External causes are those coming from other objects' (Rosental e Straks, 1960, p. 108–9).