

# **The economic possibilities of technological progress: business restructuring and the labor market in the 21st century<sup>1</sup>**

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## **Abstract**

The extraordinary technological progress in recent decades rekindles the questions raised by John M. Keynes in *Economic Possibilities for Our Grandchildren*, especially about its emancipatory potential. Economic development has rendered work almost irrelevant for social reproduction and wealth generation in the 21st century, by reducing its necessity to produce our existence. It has also made human emancipation possible, expanding freedom and leisure time, creating room for a good life – as Keynes had envisioned through the lens of the ancient Greeks – rich in love, friendship, beauty, and the pursuit of truth.

However, overcoming the economic problem seems distant politically. This paper discusses two central issues.

The first is the corporate restructuring that has taken place in recent decades, characterized by de-conglomeration and rentism, which has shaped a new international division of labor. Under the logic of “shareholder value”, large corporations have focused on their core business, reduced their productive investments, and prioritized the financial appreciation of their stocks and dividend distribution. Technological monopolization and its private appropriation have led to material abundance for only a small portion of the wealthy and their associates, driven by consumerism and waste, especially in affluent countries.

The second issue is related to the impact of the development of productive forces on the rich countries’ labor markets, leading to the exclusion of increasingly larger segments of the population, subject to structural unemployment and deteriorating living conditions. In a neoliberal political order, technological advancement has pushed growing

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portions of the population into serving the wealthy, the only remaining activity that expands job opportunities while exacerbating social inequality.

**Key words:** technological progress; business restructuring; labor market.

## **Introduction**

Since the Industrial Revolution, human knowledge – embodied in machines, factories, and products – has gradually liberated the accumulation of capital from physical and human constraints, enabling it to stand on its own feet.

Driven by competition, the specifically capitalist mode of production enforces an endless race for the technology development in pursuit of greater profits. As a result, humans have been transforming natural materials into instruments of their will over nature<sup>2</sup>, replacing living labor with dead labor incorporated into fixed capital.

Concretely, the Industrial Revolution was the revolution of the factory, powered by coal energy and the steam engine.<sup>3</sup> Between 1760 and 1840, human, animal, and natural (water and wind) power were gradually replaced by the steam engine. It was used in contraptions like the mechanical loom and especially in trains and metal boats, which began to integrate the global economy.

The development of the machine system and the interconnection between them led to an automatic production of various goods and other machines, resulting in an articulated industrial system. In this new system, “the subordination of the forces of nature to social intelligence is a prerequisite for the productive power of the working environment that has developed into an automatic process”<sup>4</sup>.

After the Industrial Revolution, technical progress was characterized by periods of significant acceleration and waves of integrated investment driven by technical innovations.<sup>5</sup>

What has come to be known as the “Second Industrial Revolution” made increasingly intensive use of the fruits of the Scientific Revolution that began in the 16th century. Knowledge, no longer derived from divine revelation but from the observation of the world, started with Astronomy through the works of Copernicus, Brahe, Kepler,

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<sup>2</sup> MARX (2011), p. 1.298.

<sup>3</sup> As well defined by Marx, machines consist of (1) a driving force - capable of generating controlled energy - that, through (2) a transmission mechanism, moves (3) the tools of labor (MARX, 2000a, chapter 13).

<sup>4</sup> Translation by the authors. MARX (2011), p. 1.303.

<sup>5</sup> SCHUMPETER (1939); SCHUMPETER (1982).

and Galileo. It then gained momentum with the scientific method developed by Bacon and Descartes and the physics of Newton.

By the end of the 19th century, physics and chemistry had significantly expanded our understanding of the world.<sup>6</sup> Between 1870 and 1900, significant advancements emerged, including petroleum and its derivatives, electricity, steel, heavy chemical industry, heavy capital goods industry, and the internal combustion engine.

By the end of the 20th century, massive public investments in electronic innovations led to what became the “Third Industrial Revolution.” Now, knowledge embedded in fixed capital can even replace intellectual humans’ skills.

Faced with this extraordinary progress, a fundamental question arises, directly related to the emancipatory potential of technological progress. By reducing the need for labor in the production of human existence, capitalism has made work almost irrelevant for both society's reproduction and wealth generation in the 21st century. More than ever, Marx's observation holds true: labor has become a wretched basis for capital accumulation.<sup>7</sup>

By reducing the uncertainties of nature, technological development has given humanity greater control over its destiny.<sup>8</sup> As John M. Keynes had already emphasized in “Economic Possibilities for Our Grandchildren,” the development of social labor productivity has made human emancipation possible by expanding freedom and extending leisure time to all.

Today, science and technology have created room for a good life, just as the Greeks had envisioned, rich in love, friendship, beauty, and the pursuit of truth, as well as for the free realization of all human potentials.

However, in capitalism, technological progress has not liberated humanity from the struggle for survival, nor has it significantly expanded leisure time, which is the true wealth, or provided ample space for the development of individualities.<sup>9</sup>

In developed countries, the monopolization of technology and the private appropriation of its outcomes have only brought material abundance to a small portion of cosmopolitan elites and their surroundings. However, it's crucial to emphasize that this

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<sup>6</sup> LANDES (2005), chapter 5.

<sup>7</sup> MARX (2011), p. 1.236.

<sup>8</sup> “Indeed, in the early stages of human history, the quality and quantity of available tools did not determine the overall way in which people lived, but rather the range within which different forms of human existence could vary”. Translation by the authors. (ARON, 1981, p. 80).

<sup>9</sup> HELLER (1978).

abundance has been marked by consumerism, wastefulness, degraded leisure, and a senseless life.

At the same time, the development of productive forces has been excluding increasingly larger segments of the population, subjecting them to unemployment and precarious living conditions.

Another fundamental issue is related to the diffusion of technological progress.<sup>10</sup> With the concentration of income and wealth generation in the capitalist center, the operation of market mechanisms compels the rest of the world to adapt to a peripheral role as providers of raw materials or sources of cheap labor for large transnational corporations.

This peripheral condition, often rooted in more archaic forms of production, only allows local oligarchies to modernize their consumption patterns and lifestyles. Meanwhile, billions of people, especially in Africa, Latin America, and large parts of Asia, continue to endure hunger and poverty.

The recent decades have witnessed the emergence of a multitude of servants worldwide, struggling for opportunities due to the disproportionate concentration of wealth in the hands of a few wealthy individuals.

In such circumstances, how can one speak of the development of human potential?

The “Third Industrial Revolution” has strongly reintroduced the discussion of the issue of working time and the expansion of freedom for all. If the benefits of the development of productive forces were distributed socially, it would be possible to envision a world far from environmental collapse, immoral social inequality, hunger, poverty, severe psychological suffering, and widespread ignorance.

Therefore, it can be said that overcoming what would be the prehistory of humanity no longer encounters insurmountable economic problems.

The issue lies within the capitalist system: hunger is no longer caused by the inability to produce enough food but by the fact that people lack the money to buy food. The vast deficiencies in housing, sanitation, clothing, healthcare, transportation, education, and culture are not a result of a permanent supply shortage but rather a lack of income to obtain goods and services. This is because the productive potential of humanity, required to meet its needs, depends solely on investment planning.

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<sup>10</sup> PREBISCH (1949).

The “irrationality” of this social order stems from the asymmetry in power relations, which deepens with business concentration and financial power in the hands of a few financial funds, especially based in the United States.

To frame this discussion properly, this paper broadly addresses the transformations in corporate structures that have occurred in recent decades, with a focus on de-verticalization, the shift of production to the East, especially China, and the changing logic governing capital accumulation, increasingly centered on stock value appreciation and dividend distribution.

In the second section, this paper discusses the structural changes that have taken place in the labor market, particularly those related to sectoral shifts in the occupational structure and those linked to the expansion of personal services, the only relatively dynamic activity.

## **1. Technological Progress, Business Restructuring, and the New International Division of Labor**

The technical transformations of the “Third Industrial Revolution” allowed machines to incorporate a substantial part of intellectual tasks, expanding society's leisure time through the extraordinary increase in labor productivity and the substitution of humans by electronic machines. They also radically altered all industrial sectors, with significant impacts on integration, flexibility, processes and products customization, and the enormous new production scale, truly global in nature. These changes interconnected the planet through satellites, mobile networks, and fiber optics, enabling interpersonal communication, financial transactions, and the control of devices, machines, and vast manufacturing units around the world.

However, it should be emphasized that the trillions of dollars in investments by the U.S. government in the key technologies development of the “Third Industrial Revolution” did not mean their rapid introduction and diffusion in the country's industrial system. In the 1970s, new technologies advanced in the military complex, communication infrastructure, and sectors like electronics but moved more slowly elsewhere since heavy investments required promising prospects of economic growth.

The manufacturing industry, one of the cornerstones of post-war American hegemony, witnessed its leadership eroding due to the rapid development of Japan and Germany and the rise of Brazil and South Korea. Its difficulties were further exacerbated when Volcker's 1979 monetary supply shock reaffirmed the role of the dollar, further

deteriorating its competitive position. Currency appreciation, in a world with “shorter” distances thanks to advances in international logistics, harmed American exports and led to a flood of imports into the country, first from Japan and later from the Asian Tigers (Taiwan, South Korea, Singapore, Hong Kong), especially in sectors such as everyday goods and durable consumer goods.

With an outdated industrial structure and the mass influx of cheap imports, the position of large American corporations became very challenging. It required extensive restructuring and heavy investments that were simply unfeasible in that context.

As Steindl pointed out, when investment prospects decline, and the profit rate exceeds the investment rate, non-reinvested profits are channeled into the financial sphere.<sup>11</sup> This movement of large corporations in search of new profit opportunities found promising prospects in financial investments in the early 1980s. In addition to the speculative investment possibilities resulting from the end of the Bretton Woods agreement, the rule 10b-18 of the Securities and Exchange Commission (1982) created the possibility of stock buybacks, allowing publicly listed companies to use their net resources to inflate the values of their own shares.<sup>12</sup>

Companies gradually shifted away from strategies focused on productive investment and growth, which were characteristic of the post-war decades. Instead, they adapted to a new *rentier* logic, based on asset speculation, stock appreciation, and the distribution of dividends to shareholders. This transition gained momentum during the 1990s, supported by the financial deregulation undertaken by the Clinton administration (1993-2000), and it became central for large corporations in the 21st century.

It's worth noting that the largest U.S. companies, those in the Standard & Poor's 500, repurchased \$2.5 trillion of their own shares between 2000 and 2009, which is equivalent to 58% of their total accumulated revenue.<sup>13</sup> At the same time, 41% of their net revenues were distributed as dividends.<sup>14</sup>

Instead of new investments aimed at regaining competitiveness, there were draconian cuts in spending and personnel, variable compensation for executives, cash generation for mergers and acquisitions (M&A), and stock buybacks. These changes were in the interest of shareholders – disinterested in the long-term fate of the company and

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<sup>11</sup> STEINDL (1976), part II.

<sup>12</sup> LAZONICK (2014), p. 31.

<sup>13</sup> LAZONICK (2013), p. 6.

<sup>14</sup> LAZONICK (2013), p. 6.

concerned only with stock appreciation and the distribution of huge dividends. They also benefited high-ranking executives in the companies, who began to receive a significant portion of their income through “stock options”.<sup>15</sup>

This new logic, known as the “shareholder value” approach, has profoundly altered corporate structures. The pursuit of very short-term stock appreciation may find its ultimate symbol in General Electric (GE). Starting in 1981, GE, one of the world's largest industrial companies, began divesting assets. In just five years, it sold 117 business units, equivalent to 20% of its assets, and laid off more than 100,000 employees, representing 25% of its workforce. The goal was to focus only on activities in which it held a global leadership position.<sup>16</sup>

At the same time, GE began acquiring numerous businesses in the financial sector, turning GE Capital into one of the largest financial institutions in the United States. At its peak, GE Capital accounted for 50% of the group's revenues.<sup>17</sup>

Another strategy used by large American corporations, aimed at rapidly gaining competitiveness, was the outsourcing of parts, components, and finished products. Thanks to technological changes and the reduction in transportation costs, production shifted to Japan and the Asian Tigers, leading to the influx of products like sneakers, videocassette players, and microwave ovens into the American market in the 1980s. In a later stage, starting in the 1990s, production subcontracting moved towards China.

Nike is another emblematic example of a corporation in this new historical context, with its massive global investments in design and marketing. The company can be considered one of the pioneers in production outsourcing, as it has never built a factory, importing its products from Japan in the 1970s, from South Korea and Taiwan in the 1980s, and from China, Pakistan, and Vietnam in the 1990s.<sup>18</sup>

Progressively guided by financial logic, the industry has undergone an intense process of “de-conglomeration” over the last three decades. Large American oligopolistic corporations started dismantling their integrated and vertically organized structures, focusing on their core business and markets where they held global leadership. Thanks to the “Third Industrial Revolution”, they abandoned full-scale production of goods and

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<sup>15</sup> “Stock options” are a benefit granted to company executives, allowing them to purchase company shares at a pre-established price after a specified period.

<sup>16</sup> DRANIKOFF et al. (2002).

<sup>17</sup> DONLON (2014).

<sup>18</sup> DONAGHU & BARFF (1990); SPENER et al. (2002).

became integrators of vast global value chains. Nowadays, companies organize an extensive production network around the world, covering everything from input supply to the final sale, including production and distribution.

Expanding their scales toward the global market, large corporations concentrated on more profitable tasks such as (1) branding and large global advertising campaigns, (2) solving complex engineering problems, (3) controlling distribution chains, and (4) research and development (R&D).<sup>19</sup>

Brands have become one of the major competitive edges in a world dominated by globalized and omnipresent media, representing lifestyles, status markers, and social differentiation.

Logistics innovations also played a significant role in corporate restructuring. The introduction of shipping containers in 1968, alongside changes in the capacity and speed of global transportation – including automated mega-ships with very few crew members that can carry up to 30,000 containers to ports equipped with computerized equipment – enabled the redistribution of manufacturing activities around the world. By spreading the production chain globally to subcontractors in low-tax and low-wage countries in Asia (sometimes with outdated labor practices), large corporations drastically reduced their personnel needs throughout the entire production and transportation chain.

The “disinvestment” of their assets in the United States, mass layoffs (downsizing), the reduction of hierarchical levels, and the significant cost rationalization enabled by new technologies also drove merger and acquisition (M&A) processes motivated by financial appreciation. This resulted in a dramatic reduction in the number of companies and the formation of large monopolistic blocs in all sectors of the global economy.

It is estimated that the large groups (the top 36%) already held 95% of the operating revenues of the 43,000 known transnational corporations in the early decades of the 21st century. Furthermore, the 737 major shareholders – financial institutions, particularly investment funds – controlled 80% of these corporations.<sup>20</sup>

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<sup>19</sup> NOLAN (2001), p. 34. “In terms of spending on research and development, the concentration is similar: only 100 large companies account for 60% of R&D spending, with two-thirds of the spending occurring in just three sectors (information technology, pharmaceuticals, and automotive)”. (ANTUNES & BELLUZZO, 2015).

<sup>20</sup> GLATTFELDER (2013); ANTUNES & BELLUZZO (2015). The following discussion relies extensively on ANTUNES (2011), chapter 2.



Today, the three major financial fund managers – BlackRock, Vanguard, and State Street – control 16.5% of the capital of the 3,000 companies in the Russell 3,000 index, holding more than 4,600 ownership stakes exceeding 5% in the capital of these companies.<sup>21</sup>

Companies that were slow to react or operated on a smaller scale compared to the global market were eventually acquired by larger competitors. This was the case for many American consumer electronics companies, including Zenith (the creator of the TV remote control, purchased by the South Korean company LG), RCA, Sylvania, Philco, GTE, Westinghouse, and others. These companies had been facing intense competition from Japanese companies since the late 1970s.

The extensive assets restructuring required a similar move by their suppliers, who were also subjected to the accelerated centralization process that unfolded across all production chains, creating a global cascading effect<sup>22</sup>. These reshaped corporate groups also grew to enormous proportions, monopolizing their markets worldwide.

An exemplary case of these recent transformations is Boeing. Since its merger with McDonnell Douglas in 1997, its corporate strategy has been dominated by concerns about stock appreciation and dividend distribution.<sup>23</sup>

In terms of production, Boeing can be considered one of the leaders in the introduction of information and communication technologies in the manufacturing of highly complex goods. For example, the Boeing 787 Dreamliner consists of 2.3 million parts, with more than 50% of new materials involved in its production. The aircraft's fuselage is produced in blocks, eliminating the need for 1.5 million aluminum sheets, 50,000 screws, and 1 million holes, reducing weight, corrosion, and maintenance.

The production of the 787 was also innovative, with over 70% of its components outsourced to 50 partners, known as Tier-1 Suppliers, responsible for designing, developing, building entire sections of the aircraft, and performing pre-integration of structures and systems produced by their subcontractors, Tier-2 Suppliers. To coordinate so many partners around the world, the Catia, a computer-aided design software, was not enough. In the creation of the previous model (777), it already connected 2,200 computers to a cluster of 8 mainframes, maintaining the consistency of projects developed by 230 different teams simultaneously. It required a global production

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<sup>21</sup> BEBCHUK & HIRST (2019), pp. 12-13; FICHTNER et al. (2017).

<sup>22</sup> NOLAN et al. (2007).

<sup>23</sup> USEEM (2019).

chain management software, Exostar, to manage suppliers and their suppliers, as well as to synchronize purchase and sale orders, deliveries, inventory, deadlines, and more.<sup>24</sup>

Boeing divested assets, reduced costs on a large scale, and outsourced activities to more than 50 countries, revolutionizing its production structures. However, the priority of short-term gains led to a downgrade in quality standards and resulted in more frequent accidents and plane crashes in recent years, bringing serious financial and commercial problems.

The case of Boeing also illustrates deterritorialization, another striking characteristic of corporate groups that have emerged in recent decades. Subordinated to financial logic by their largest shareholders, often large financial funds based in New York and London, their geographical distribution is peculiar. Production was progressively shifted to Asian countries, organized by nation-states committed to economic expansion and characterized by strong social discipline, as well as devalued currencies, low tax burdens, and cheap and abundant labor.

The controlling holding company became headquartered in tax havens to escape the taxation of nation-states, and top management and core business activities were generally retained in their home countries. The large 21st-century corporation, despite its global scale and dispersion around the world, is highly computerized and lean, both in terms of personnel employed in production and in administration, marketing, distribution, and more.

The depth of this offshoring process can be seen in the size of intra-firm trade.<sup>25</sup> In 2006, 47% of all U.S. imports were intra-firm, reaching 92% in the automotive sector, 69% in semiconductors, and 60% in communication equipment. Regarding the exports of multinational industries, 70% were conducted within the same companies in 2004<sup>26</sup>.

This deterritorialization process also depended on the trade liberalization driven by the U.S. government and large transnational corporations. The expansion of the U.S. trade deficit could have led the United States to seek trade compensations from other countries, but the new way of organizing companies was making their interests diverge

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<sup>24</sup> E2OPEN (2007).

<sup>25</sup> COSTINOT et al. (2009), p. 9. Intrafirm trade is trade that occurs between companies with at least 6% cross-ownership in each other.

<sup>26</sup> RAMONDO et al. (2015) considers intrafirm trade to be trade between companies where at least 50% of the capital is held by affiliates.

from those of the country since they are the main importers of products, parts, and components from Asia.<sup>27</sup>

The movement towards trade liberalization in recent decades was based on bilateral and regional agreements (from 22 in force in 1990 to 354 in 2022), no longer relying on complex multilateral negotiation rounds like the Tokyo Round (1973-1979) or the Uruguay Round (1986-1994).<sup>28</sup> Highly complex and extensive, but with fewer participants involved, these bilateral and regional agreements reduced trade and financial barriers and imposed strict restrictions on intellectual property access, unlike the rules of the World Trade Organization (WTO)<sup>29</sup>. It also has its own dispute resolution mechanisms, private arbitration, blocking the action of both Nation States and the WTO, which requires consensus and leads to long diplomatic disputes.

The result of this process of productive globalization was a profound reorganization of the international division of labor. The movement of American companies led large German companies to migrate to Eastern Europe in search of cost reduction and improved competitiveness – especially to Poland, Hungary, and the Czech Republic<sup>30</sup> – and to China in search of competitiveness and access to the enormous expansion of the domestic market.<sup>31</sup>

Japanese companies – after the Plaza Agreement (1985) that led to the appreciation of the yen – made a similar move. Initially, they moved to their Asian neighbors. In the last two decades, the shift has also been towards China: by 2010, 5,600 Japanese companies had already established subsidiaries there.<sup>32</sup> This movement was accompanied by 2,100 Korean companies, which also set up operations in China.<sup>33</sup>

In other words, this movement has shaken the world in recent decades, shifting manufacturing production from the North Atlantic to the East, integrating markets, and standardizing production and consumption patterns worldwide.

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<sup>27</sup> AGUR (2007), p. 2.

<sup>28</sup> WTO (2022).

<sup>29</sup> “The North American Free Trade Agreement, for example, had 1,700 pages. More recently, in 2016, the Trans-Pacific Partnership (TPP) agreement reportedly contained 5,600 pages. Instead of free trade constituting a simple system without tariffs or the removal of the state from the international economy, an increasingly complex and unequal regime of global economic governance was established”. (HATHAWAY, 2020, p. 329).

<sup>30</sup> MARIN et al. (2003), p. 150.

<sup>31</sup> CAMARERO et al. (2020). FREY (2005) indicates that German investments in China are primarily linked to the automotive industry, electrical machinery, chemistry, and mechanics.

<sup>32</sup> METI (2012), p. 216; ZHOU & LATORRE (2021); FUNG et al. (2003).

<sup>33</sup> SHIN (2019), p. 34.

This broad freedom granted to capital movement in the pursuit of higher profits and maximum stock value has led to the location of production, sourcing of inputs, product distribution, taxation, and dividend distribution based on the advantages obtained in each locality.

This is another facet of the changing relationship between Nation-States and private interests. Large multinational corporations began to demand tax exemptions, reduced labor rights, and the repeal of environmental restrictions.

Paradoxically, the globalization of production has exposed the world to various types of local problems. Any disruption in production chains – such as earthquakes in Japan, a ship stranded in the Suez Canal, the COVID-19 pandemic, or war in Ukraine – can cause inflationary spikes and severe shortages of products and components, often essential for ensuring food security and the health of entire populations<sup>34</sup>.

The transformation of corporate structures, based on financial valorization and investments in marketing and branding, has, in turn, left companies vulnerable to strategies used by the Chinese state and its large corporations.

The dynamism and increasing technological capabilities of large Chinese companies, supported by a vast captive domestic market, have enabled them to climb new positions in global value chains and threaten the long-term prospects of large American corporations, which lack essential technical competencies and are increasingly dependent on Chinese manufacturing.

By keeping the state at the center of the economy and not adhering to the dictates of the neoliberal international order, China has rapidly developed over a few decades and become one of the world's major powers.

## **2. Effects on Society**

The “Third Industrial Revolution” had profound impacts on the labor world. In a scenario of low growth, the new technologies disrupted societies by replacing living labor with dead labor – incorporated in computerized equipment – to a much greater extent than the mechanization of manual labor in the early 20th century.<sup>35</sup>

The impact of these changes on the employment structure in the central countries was severe. Agricultural work, the basis of human existence since the Neolithic

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<sup>34</sup> WEBER & WASNER (2023).

<sup>35</sup> COLLINS (2013), p. 144.

period, was drastically reduced with the advancement of industrialization in the field, introducing computerized tractors that plant, harvest, and soil-correct; center pivot irrigation systems; genetically modified seeds to resist pests and chemicals; new pesticides and fertilizers, and more.

In the United States, in 1970, 4.2% of the economically active population (EAP) worked in agriculture<sup>36</sup>; In 2021, only 1.4% of the EAP in the United States worked in agriculture, even though it is one of the world's leading agricultural powers.<sup>37</sup> A similar process occurred in Europe as well. In France, 2.5% of the EAP is engaged in agricultural production. In Italy, it's 3.6%, and in Germany, it's 1.3%.<sup>38</sup>

Through an extensive process of economic development and urbanization planning, China, the world's largest food producer, experienced a remarkable decline in agricultural employment. It decreased from 60% of the economically active population (389.5 million people) in 1991<sup>39</sup> to 22.9% (102.2 million people) in 2021.<sup>40</sup>

Employment in the manufacturing sector was even more affected. In the United States, manufacturing employment decreased from 20.8% of the economically active population in 1970 to 8.5% in 2021.<sup>41</sup> In Europe, where the labor market is more regulated and working hours are shorter, there were 10.1% of the economically active population (EAP) employed in the industry in France in 2021, 18% in Germany, and 17.1% in Italy.<sup>42</sup>

China, which has been rapidly industrializing unlike the Western countries, also saw a slight decline in industrial employment in the last decade: from 30% of the economically active population (EAP) in 2012 to 27% in 2019.<sup>43</sup> The decrease was not more pronounced primarily due to the job targets set by a government that plans the economy and society.<sup>44</sup>

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<sup>36</sup> ANTUNES (2011), p. 57.

<sup>37</sup> ROSER (2013).

<sup>38</sup> OECD (2022). 2021 Data.

<sup>39</sup> WORLD BANK (2022).

<sup>40</sup> STATISTA (2022). The data on China's total labor force is from the WORLD BANK (2022).

<sup>41</sup> December 2021. U.S. BUREAU OF LABOR STATISTICS (2022). The construction industry employed 5.1% of the U.S. labor force.

<sup>42</sup> OECD (2022). The industry includes construction.

<sup>43</sup> WORLD BANK (2022).

<sup>44</sup> LAM et al. (2015); BUTOLLO (2013).

More than half of the industrial robots sold worldwide in 2021 were installed in China.<sup>45</sup> The density of robots in its production reached 246 per 10,000 workers, similar to that of Taiwan and the United States, having multiplied by 5 between 2015 and 2020.<sup>46</sup>

This process of significant job destruction also occurred in business services. Information and communication technologies greatly expanded the managerial capacity of top management. Intermediate and mid-level occupations were the most affected, leading to a significant employment reduction in support staff such as managers, advisors, secretaries, receptionists, typists, office clerks, etc.<sup>47</sup>

In simpler tasks, technical progress has also advanced, with its reach limited only in functions related to decision-making and communication capabilities. Surveillance can be performed by cameras and computerized systems, but certain contexts and hazards can only be assessed by a person; cleaning can involve various robots and machines, but tidying up tables, shelves, and details requires a janitor; telephone service can be almost entirely automated, but certain issues require personal attention, and so on.

It is true that electronic innovations have exacerbated labor market polarization<sup>48</sup>. In addition to a few highly skilled functions at the top of organizations, only a mass of low-paying, highly turnover-rate wage jobs remains. Support services for production have become the largest occupational group in the United States, with 18.3 million employed (13% of the labor force), especially in cleaning and surveillance<sup>49</sup>.

However, today, the overwhelming majority of the surplus population created by the development of productive forces is found in services provided to people, which have become an enormous reservoir of workers, struggling for survival, working for those who have the income to employ them.

It should be noted that even in these services, the need for labor has been drastically reduced by computerized equipment, products from the chemical and food industries, numerous communication, information, and security gadgets, and household appliances – washing machines, vacuum cleaners, electronic kitchen appliances, etc.

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<sup>45</sup> IFR (2022).

<sup>46</sup> IFR (2021).

<sup>47</sup> LEVY (1987); WOLFF (2010); AUTOR (2010); AUTOR et al. (2006).

<sup>48</sup> AUTOR et al. (2006), p. 02; ANTUNES (2011), AUTOR et al. (2002), LEVY & MURNANE (1992); HOLZER et al. (2011).

<sup>49</sup> May 2021. U.S. BUREAU OF LABOR STATISTICS (2022).

As Marx foresaw, the dramatic increase in the social productivity of labor generated by capitalism has obliterated occupations on a large scale in all sectors of human life, rendering labor redundant. And this process will continue to unfold.

It is estimated that 47% of all jobs in the United States<sup>50</sup> – and 45% to 60% of European jobs<sup>51</sup> – could be replaced by machines and computers in the coming years! Only artificial intelligence technologies like GPT – pre-trained generative transformers used to write texts – are expected to impact 10% of the tasks performed by 80% of the U.S. workforce, rapidly reducing the demand for labor<sup>52</sup>.

But we cannot forget that the unemployment issue had already started to manifest itself in the immediate post-war period, until the Welfare State began to provide, generally free of charge, essential personal services such as health, education, security, transportation, housing, public utilities, etc. These essential personal services, offered by the Nation States, were decisive in employing nearly 1/3 of the labor force in the UK and France and 1/4 in Germany in the early 1980s<sup>53</sup>.

In Western European countries, therefore, the state guaranteed social rights to all its citizens and increased equality. For example, in the case of the English National Health Service (NHS), any citizen is treated in the same way and has the same rights, receiving inexpensive medication and all necessary treatment for their illness.

Based on public competitions rather than appointments and private interests, the public service requires higher qualifications from its personnel and offers stable working conditions and better wages, building a significant middle-class stratum – intellectual and free from personal dependence ties.<sup>54</sup>

During the “Golden Years”, European states also redistributed the fruits of the advancement of productive forces by significantly reducing working hours (Table 1) and expanding rights that reduced the workforce through benefits (for the elderly, sick, and disabled), paid leave (for mothers and fathers), and extending the years of compulsory education for young people and children.

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<sup>50</sup> FREY & OSBORNE (2013).

<sup>51</sup> BOWLES (2014).

<sup>52</sup> ELOUNDOU et al. (2023), p. 11.

<sup>53</sup> SCHMIDT & ROSE (1985), p. 131; PAGE (1985), p. 103; PARRY (1985), p. 60.

<sup>54</sup> ROSE (1985), pp. 37-38.

**Table 1: Annual Working Hours, thousands of annual hours, Selected Countries, 1950-2017**

	<b>1950</b>	<b>1990</b>	<b>2017</b>
<b>Germany</b>	2,4	1,6	1,4
<b>United States</b>	2,0	1,8	1,8
<b>France</b>	2,2	1,6	1,5
<b>Italy</b>	2,1	1,9	1,7
<b>United Kingdom</b>	2,2	1,7	1,7

Source: OUR WORLD IN DATA (2022).

Indeed, the expansion of leisure time did not result in an increase in individual autonomy or the development of a rich individuality, as envisioned by Marx, Keynes, Adorno, and Gorz. Above all, the reduction of working time, appropriated by capitalism, turned everyone into passive consumers in search of fleeting amusements and vulgar passions. This resignation allows them to forget the repetitive, uninteresting, and senseless nature of their daily work.<sup>55</sup>

But in recent decades, the situation has reversed, and the immense productivity gains have been shockingly captured by the wealthiest. The neoliberal counter-revolution ended what remained of the New Deal in the United States and the European post-war society project by:

- i. Disrupting the financing capacity of states;
- ii. Reducing the tax burden on the wealthy;
- iii. Turning public debt into a speculative asset rather than a source of public spending;
- iv. Making successive cuts in social public spending under the pretext of combating inflation;

Technological progress has been used to deepen the division between the rich and the poor, leading to a profound social regression. Instead of a significant reduction in working hours, income inequalities have increased, and rights have been eroded. Under neoliberalism, jobs have decreased rapidly, social spending has shrunk, and living conditions have deteriorated.

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<sup>55</sup> ADORNO & HORKHEIMER (1985), p. 133.



Nonetheless, political resistance to labor market destabilization remained a main difference between the United States and Western Europe. Despite the systematic attack on people's rights, a significant portion of public employment, social benefits, and labor regulation was maintained in European countries, supporting substantial segments of the population outside the desperate struggle for survival.

In Europe, structural unemployment became the main manifestation of the immense development of productive forces, while in the United States, it led to the creation of an enormous army of personal service providers.

The total number of personal service occupations – education, healthcare, entertainment, food services, cleaning, personal care – is immense, accounting for 45.1% of all occupations in the United States<sup>56</sup>. Indeed, this number is much larger when considering that a significant portion of other activities also serves people in transportation and trade (18.7% of the total labor force), professional and business services (14.4% of the total labor force), utilities and information services (2.2% of the total labor force), and financial services (6% of the total labor force).

Estimates suggest that there are 57 million people without fixed employment, doing only task-based work or supplementing their income with other activities. Subjected to flexible working hours, they are often forced to work without breaks or days off, and at other times, they simply have no work or income. Just think of the tens of millions of food delivery drivers, Uber drivers, gig workers on Amazon's Mechanical Turk, and the countless salespeople who earn only on commission.

This means that the extraordinary advancement of productive forces is leading to a significant contraction of wage employment, which is becoming less dominant as the primary form of labor relations.

Another significant consequence is that the massive concentration of wealth among the richest has recreated personal dependency bonds typical of traditional societies. Drawing parallels with clients<sup>57</sup> in the ancient world or medieval serfs can be enlightening: today, a significant portion of people has become dependent on the income

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<sup>56</sup> December 2021. This is the sum of jobs in health services, education, leisure, hospitality, other services, and the public service. (U.S. BUREAU OF LABOR STATISTICS, 2022).

<sup>57</sup> “The term “client” in this context refers to a free person who seeks the protection and support of a patron. Clients, regardless of their wealth or social standing, would approach a family head or patron to declare themselves as clients. This relationship often involved reciprocal duties and obligations, and it was a common practice in ancient Roman society. Clients could be rich or poor, and sometimes they held more power or influence than the patron they approached. The concept of clients and patrons was deeply ingrained in Roman society and became an established institution and ritual”. Translation by the authors. (VEYNE, 2009, p. 89).

and benevolence of the wealthiest, who, unlike patricians and nobles, have no obligation to their servants.

The trend of widening income and wealth inequality also proved to be functional. The increase in absolute and relative income allowed the wealthiest individuals to delegate the task of satisfying their needs and desires to these numerous service providers, who have no other options to secure their livelihoods. Dependent on the spending of the rich and with no time to take care of their own lives, the new servants also began to demand less quantity of lower-quality services, and so on, forming concentric circles of income and personal dependence.<sup>58</sup>

The expansion of social differences can be seen in the worsening of the underestimated measures of inequality. Since 1995, the top 1% of the world has accumulated nearly 20 times more wealth than the bottom 50% of humanity.<sup>59</sup>

The wealthiest among the wealthy (0.1%) have been amassing a disproportionate share of income and even greater wealth, larger than that of the early 20th century when the state was small, taxation was minimal, and social Darwinism prevailed. The wealth of the world's top 10 billionaires is greater than that of the poorest 3.1 billion people<sup>60</sup>, and if they were to lose 99.999% of their wealth, they would still be wealthier than 99% of the world<sup>61</sup>. Among all developed countries, the United States has contributed the most to the expansion of social inequality<sup>62</sup>.

It was in this context that the ideology of entrepreneurship emerged. In addition to the naturalization of the social order, the idea of self-employment (the “entrepreneur of oneself”) was disseminated through the mass media as the salvation for the entire surplus population that had become unnecessary for the production of human life. Faced with the brutal advancement of labor productivity, a “individual solution” is sold to the new servants: to start their own business to satisfy the needs or desires of those with money, regardless of how degrading, “unnecessary,” or fleeting they may be.<sup>63</sup>

But the search for individual solutions cannot mask the social regression, visible in all developed countries. It is much more shocking in the old industrial cities of

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<sup>58</sup> “The development of personal services is, in any case, only possible in a context of increasing social inequality, in which a portion of the population monopolizes well-paid activities and forces the rest to assume roles as servants”. Translation by the authors. (GORZ, 1989, p. 156).

<sup>59</sup> LAWSON & JACOBS (2022), p. 2.

<sup>60</sup> WORLD INEQUALITY DATABASE (2021).

<sup>61</sup> LAWSON & JACOBS (2022), p. 2.

<sup>62</sup> PIKETTY & SAEZ (2007).

<sup>63</sup> KORCZYNSKI (2001), KORCZYNSKI (2002), chapter 4; WEATHERLY & TANSIK (1993); HOCHSCHILD (2003).

the United States, in the abandoned factories that have become home to the homeless, in tent cities, in trailer parks. Social regression can also be seen in the immense number of people who wander the country and crowd into motel rooms shared with strangers, who sleep in their cars, in parking lots where they've found some work, or on the streets. In the tens of millions who spend their days on their smartphones looking for opportunities or waiting for a call or message that will allow them to earn some money.<sup>64</sup>

If we consider that any democratic society requires economically independent individuals, as recognized by, for example, Rousseau and Jefferson, we can understand the seriousness of the issue. The deterioration of working conditions has not only led to an increase in personal dependence on the wealthy but has also reduced the political power of unions and progressive parties, reinforcing neoliberal hegemony.<sup>65</sup>

The “Third Industrial Revolution”, in addition to mass job destruction, is also further dissolving the class structure of capitalism. In recent decades, it's not only the new middle class and the working class that have been shrinking due to technological progress, outsourcing, and corporate restructuring, which has turned people into a heterogeneous mass searching for means of livelihood.

The capitalist class has been equally affected<sup>66</sup>: the big business owner and top management, concerned with the fate of their company, have been replaced by executives paid with stocks and dividends, with no long-term interest in the corporation or the country<sup>67</sup>.

In recent decades, societies have been polarizing between *rentiers* and their entourage on one side, and a growing mass of socially dispossessed people, with no purpose or usefulness for the reproduction of social life or for capital accumulation.

Decades of neoliberal capitalism, in addition to threatening human life on the planet with climate crisis, have sown ominous prospects for society's future.

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<sup>64</sup> EHRENREICH (2004); ARTUS & VIRARD (2009).

<sup>65</sup> STANSBURY & SUMMERS (2020). For example, labor unions in the United States, which were fundamental to its social organization during the post-war period, have lost membership: from 30.4% in 1960 to 10.3% of workers in 2019, with less than 3% in the leisure and related sectors. (BUREAU OF LABOR STATISTICS, 2020).

<sup>66</sup> “Capitalists, while employees of the process that simultaneously accelerates social production and, with it, the development of the productive process, become superfluous to the same extent as they enjoy their usufruct by proxy of society and command social labor. What happens to them is what happened to the feudal lords, whose rights were transformed, in exact proportion to the extent that their services became superfluous, into antiquated and useless privileges, thus hastening their decline”. Translation by the authors. (MARX 3-200 *apud* BADALONI, 1979, p. 249).

<sup>67</sup> SCHUMPETER (1984), part 2; GALBRAITH (1997), chapter 6.

In the midst of unimaginable material progress, the greed of the wealthy has led to the disorganization of social life, a lack of prospects, and the accumulation of frustration and anger among a vast number of dispossessed and marginalized individuals. This resentment and bitterness form the basis of movements with fascist traits that haunt contemporary society.

### **Concluding Remarks**

As Marx predicted, technological progress led to an increase in the organic composition of capital<sup>68</sup>, eliminating occupations and turning labor into a wretched basis for capital accumulation. Marx also foresaw that this movement would lead to technological barbarism. Hence his desire to accelerate economic, social, and political change toward an utopic communist society.

Today, more than ever, contemporary societies are facing a great dilemma: the advance of technological barbarism or profound change that leads to the creation of free time for the development of human potential.

It should be recalled that throughout the 20th century, society's free time grew – albeit less than was possible – but was progressively appropriated by capital. Transformed into leisure and entertainment by the culture industry, it turned into an escape from the world. Adorno said that pseudo-activity – driven by commercial interests unrelated to those of the people, typical of time spent on activities like tourism or entertainment – serves only to keep people bound to fleeting and vulgar passions when they are not working<sup>69</sup>. Within the current framework, leisure time, grounded in empty entertainment, hinders questioning of the organization of the current capitalist world and the search for meaning in life.

After the COVID-19 pandemic and the partial breakdown of barriers between work and non-work due to advances in information and communication technologies, the appropriation of free time by capital has expanded. For the vast majority, it has meant an extension of working hours, further restricting time for meals, sleep, family, and friends. Always mediated by cell phones and computers, it has also mingled with the entertainment of social networks, online videos, and games, creating a world of

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<sup>68</sup> The proportion between the means of production and the workforce in terms of value. (MARX, 2000a, p. 517).

<sup>69</sup> ADORNO (1995).

permanent escape from reality – which includes, for example, the increasing use of alcohol, drugs, pornography, and gambling addiction.

Today, the significant and pressing question posed by labor market transformations – unemployment, underemployment, precarious work – is to build a new kind of society characterized by emancipatory education, jobs that have inherent meaning, guaranteed minimum income, control over private media, financial repression, democratic planning, etc. Only in this way can life be conceived as an end in itself, liberated from utilitarian economic rationality<sup>70</sup> and empty entertainment.

It should be noted that many have already realized that leisure time has become the true social wealth. In what became known as the “Great Resignation,” albeit in a precarious and individualized manner, countless people have abandoned uninteresting jobs, the stressful life of the metropolis, and consumerism to lead a more austere life and engage in remote work, in smaller cities, in quieter places with more space for family, friends, and nature.

One must recall the prophecy of Aristotle over 2,000 years ago: if things can perform human labor, like Daedalus's marionettes and Hephaestus's tripods, architects would no longer need laborers, nor masters of slaves.<sup>71</sup> Thus, life could be dedicated to what truly matters: friendship, love, beauty, and truth.

Inspired by these ideals, Keynes already foresaw the possibilities of a civilized world ninety years ago:

I see us free, therefore, to return to some of the most sure and certain principles of religion and traditional virtue—that avarice is a vice, the exaction of usury is a misdemeanor, and the love of money is detestable, that those walk most truly in the paths of virtue and sane wisdom who take least thought for the morrow. We shall once more value ends above means and prefer the good to the useful. We shall honour those who can teach us how to pluck the hour and day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin. [...]

I look forward, therefore, in days not so very remote, to the greatest change which has ever occurred in the material environment of life for human beings in the aggregate. [...] Indeed, it has already begun.<sup>72</sup>

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<sup>70</sup> GORZ (2007), p. 117; GORZ (2005); (GORZ, 2004).

<sup>71</sup> ARISTÓTELES (2004), chapter. 4.

<sup>72</sup> KEYNES (1984), pp. 330-331.

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