

MASS UNEMPLOYMENT DUE TO TECHNOLOGY: THE IMPACT ON THE ENVIRONMENT OF WORK AND UNSUSTAINABLE DEVELOPMENT

DESEMPREGO EM MASSA PELA TECNOLOGIA: IMPACTO AMBIENTAL DO TRABALHO E DESENVOLVIMENTO INSUSTENTÁVEL

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Abstract

This study is dedicated to analyzing the impact of mass layoffs of workers due to the use of technology, from the perspective of the environment of work. The outline herein analyzed takes into account the fact that the environment has several facets, such as the natural or ecological environment, the artificial, the cultural, and in addition to these, as provided in Article 200, VIII, of the Brazilian Constitution, the environment of work. It is an emergency analysis, as it reflects between the speed of technological use and the consequent replacement of human labor on an unprecedented scale. This phenomenon relegates a mass of people to the margins of protection, increasing poverty and social inequality, which,

Resumo

Este estudo se dedica a analisar o impacto das demissões em massa de trabalhadores em razão do emprego da tecnologia, sob a perspectiva do meio ambiente do trabalho. O recorte considera o fato de que o meio ambiente tem diversos elos, como o meio ambiente natural ou ecológico, o artificial, o cultural e, além desses, como previsto no art. 200, VIII, da Constituição brasileira, o meio ambiente do trabalho. Trata-se de uma análise emergencial, uma vez que reflete sobre o contraponto entre a velocidade do emprego tecnológico e a consequente substituição do trabalho humano em escala sem precedentes. Esse fenômeno relega uma massa de pessoas à margem de proteção, aumentando a miséria e a desigualdade social, o que, consequentemente, demonstrará



consequently, will demonstrate that the thoughtless adoption of technology can become unsustainable. Thus, based on the analysis of statistical data on technological unemployment, a multidisciplinary bibliographical research is carried out, which permeates, in addition to Law, Philosophy, and Economics, and, based on the evidences found, it criticizes the academic biases that looks toward technology solely as form of salvation, a fact that has not been confirmed, so far, in the Brazilian reality.

Keywords: mass unemployment; ODS 8; sustainability; technology; environment of work.

que a adoção irrefletida da tecnologia pode se tornar insustentável. Assim, com base na análise de dados estatísticos sobre o desemprego tecnológico, faz-se uma pesquisa bibliográfica multidisciplinar que permeia o Direito, a Filosofia e a Economia e, a partir das evidências encontradas, critica os vieses acadêmicos que restringem o olhar para a tecnologia apenas como redentora, fato que não se confirmou, até o momento, na realidade brasileira.
Palavras-chave: desemprego em massa; meio ambiente do trabalho; ODS 8; sustentabilidade.

Introduction

This work is dedicated to analyzing the impact of mass layoffs due to the use of technology, from the perspective of the environment of work. This approach considers that the environment encompasses various dimensions, such as the natural or ecological environment, the artificial environment, the cultural environment, and, as provided in Article 200, Section VIII, of the Brazilian Constitution, the environment of work.

The purpose of the United Nations (UN), as adopted by Brazil, is to achieve acceptable work and economic growth, as outlined in Sustainable Development Goal (SDG) No. 8. Something fundamental in achieving this goal is fostering inclusive and sustainable economic growth while ensuring that all citizens have access to full, productive, and dignified employment. Although SDG No. 8 does not explicitly address the technological impact on employment, this concern can be inferred from Goal 8.3, which advocates for policies that generate decent jobs while simultaneously promoting creativity and innovation (Objetivos..., 2024).

Based on a framework of both fundamental and human rights—primarily aimed at protecting life, human dignity, and the social value of labor—this paper proposes a comparative reflection on environmental damage within the workplace. Such damage not only impacts workers displaced by technology, whether collectively or individually, but also society at large, from a broader perspective, much like damage to the natural or ecological environment of catastrophic proportions. Consequently, the same interpretative guidelines applied to the natural

or ecological environment are employed here to demonstrate a similar resonance in the work environment.

The goal is not to delve into the issue of civil liability but rather to present a preliminary analysis reflecting on the rapid pace of innovation and the drive for technological advancement, which is replacing human labor on an unprecedented scale. This phenomenon leaves a significant number of individuals without any form of protection, exacerbating poverty and social inequality—conditions incompatible with the very principles of sustainability.

Thus, based on the analysis of statistical data on technological unemployment, a multidisciplinary bibliographical study encompassing Law, Philosophy, and Economics proves relevant to bring forward a critical perspective, which emerges from the findings and serves as a counterpoint to the biases that view technology solely as redemptive—a view that has not been substantiated in Brazil so far.

1 Technology and labor relations: constitutional protection

In legal practice, those involved in the field of Law—whether from the perspective of lawyers, the Public Prosecutor’s Office, or the Judiciary—tend to narrow their analysis to the specific demand assigned or submitted to them. As a result, it is not inherent in their ordinary activities to conduct an analysis that seeks a broader social purpose beyond the interests defined in the particular case. For instance, there is little concrete reflection on the republican objectives set forth in Article 3 of the Brazilian Constitution (Brasil, 1988), which highlight the construction of a free, just, and united society (Clause I), as well as the eradication of poverty and marginalization, as well as the reduction of social and regional inequalities (Clause III).

While the principle of a pursuit for justice¹ is what drives these legal bodies, the practice and obligation of decision-making tend to undermine any deeper reflection on the necessary measures to achieve these objectives. It is evident that, by positioning them as objectives, the constituents recognized that, in 1988, their experience of society was neither entirely free, fair, nor supportive, and far from equal for all. In fact, if these were not the nation’s aims, it would be more fitting to classify them as utopias or dreams rather than objectives. Despite this, we observe

¹ “*Human life is, viscerally, an anxiety for justice.* No child understands elaborate definitions of justice, but each of them intuitively recognizes injustice, whether they experience or witness it: it is the wound that breaks their monadic solitude by reminding them of their human and living nature” (Souza, 2021, p. 155-156, free translation).

the prevalence of private interests over the rights of fraternity and solidarity. There is a significant focus on theorizing the impossibility of achieving objectives, with the notion of fraternity often being limited to selective choices² as opposed to reflecting a unified and solid commitment to achieving these goals.

To address the issue of mass layoffs caused by technological advances, it is crucial to evaluate whether this situation actually constitutes a legal issue. If, upon preliminary analysis, no illegality is identified in such actions—despite potential ethical concerns—this would not fulfill the requirements of the Law, which demands a definitive judgment (Ferraz Jr.; Lopes; Macedo Jr., 2005). This analysis therefore begins with the Brazilian Constitution, particularly Article 7, Section I and XXVII, as the combined interpretation of these sections is key.

Article 7, *caput*, of the Brazilian Constitution guarantees that the rights outlined therein are social rights owed to workers, without prejudice to other rights aimed at improving their social conditions. Section I sought to protect workers from arbitrary termination, and yet deferred the implementation of such protection until the enactment of a complementary law—over 30 years later, the Legislature has still not passed this law.

Even in the absence of a complementary law, Article 5, Paragraph 2, of the Constitution provides that human rights treaties ratified by Brazil are applicable, while § 1 states that human rights norms are immediately enforceable³. In this regard, Mazzuoli (2018) clarifies that the Federal Supreme Court (Supremo Tribunal Federal, STF), in its rulings on HC No. 87.585/TO and RE No. 466.343/SP, determined that only human rights treaties ratified with a qualified quorum are equivalent to constitutional amendments, while others hold a supralegal *status*. However, the author contends that even when those treaties have not been ratified in such a manner, they are materially constitutional.

This explanation is necessary because, despite the absence of a complementary law regulating Section I of Article 7, as referenced above, ILO Convention No. 158 had been ratified by Brazil and addressed this issue. Therefore, it could be incorporated into the Brazilian legal framework, effectively remedying the legislative omission (ILO, 1982). Since it concerns human rights, this norm would be immediately applicable, as highlighted.

2 We recommend reading Sen (2018, p. 403), in which the author explores the elements that form collective choices aimed at achieving social well-being, while criticizing how these decisions often fail to take into account the perspectives of the most disadvantaged.

3 We suggest reading Mazzuoli, Maranhão, and Azevedo Neto (2021), in which the authors argue that International Labour Organization (ILO) Conventions on social labor rights are indeed human rights treaties.

In 1996, this treaty was unilaterally denounced by then-President Fernando Henrique Cardoso through Decree No. 2,100/1996, without approval from the Legislature. At first, this lack of legislative consent rendered the convention's denunciation irregular, as it failed to respect the symmetry between the ratification of the act and its denunciation. As a result, Direct Unconstitutionality Action 1625 was filed against the decree, and it has been pending in the STF since 1997. In practice, ILO Convention No. 158 has not yet been applied in Brazil, awaiting the STF's ruling, which highlights an inertia that goes beyond the Brazilian Legislature (Oliveira; Silva, 2022).

It is worth highlighting the fact that the Brazilian State failed to regulate what the 1988 constituent deemed necessary and, even when the opportunity arose to adhere to an international regulatory framework, it took a step back. Only recently, on June 2, 2023, did the STF resume its judgement, ruling that:

After the vote by Minister Gilmar Mendes, who adhered to the position proposed by Minister Teori Zavascki, understanding that the consent of the National Congress is essential for the denunciation of International Treaties by the President of the Republic, it was recognized, in this specific case, that the request was unfounded. Minister Mendes also adhered to the thesis proposed by Minister Dias Toffoli, with this understanding having prospective effects from the publication of the trial's minutes, thereby preserving the effectiveness of denunciations made prior to this point in time [...] (Brasil, 2023).

It should be noted that the trial was once again suspended and, therefore, remains unresolved. However, it is worth highlighting the legal maneuvering undertaken by the STF. Although the court clearly acknowledged the formal defect in the renunciation of the Convention, it did not apply the expected legal consequence—namely, the recognition of the presidential decree's nullity. On the contrary, the decree was validated.

If, for the sake of controversial legal certainty, the STF had intended to avoid recognizing the *ex tunc* effects of this decision, it could have declared the decree unconstitutional as of the date of the ruling. Thus, the decree's effects would be consolidated within the timeframe between its issuance and the date of the ruling, and upon acknowledgment of its unconstitutionality, ILO Convention No. 158 would once again become effective in the Brazilian legal system. If this were deemed the appropriate public decision, it would then be up to the Executive and Legislative branches to denounce the international convention once more, this time following the proper procedures. In other words, the STF effectively states that, while the decree should be nullified, it will not be in this instance. It

is important to note, however, that this solution is not the one advocated, mainly because, as the issue constitutes a formal defect, the presidential decree should be declared null and void with *ex tunc* effects. In practice, it is evident that the protection the constitutional framers intended to extend to workers against arbitrary termination has not yet been implemented.

Likewise, in Article 7, Clause XXVII, the Constitution provided workers with “protection in the face of automation, in accordance with the law” (Brasil, 1988). Once again, the full effectiveness of this constitutional provision was left to be defined by future legislation. The risks automation posed to the labor market were apparent as early as 1988, so much so that protections for the most vulnerable—the workers—were deemed necessary (Fincato, 2018b).

Legislation, however, was never enacted, which is why on July 11, 2022, the Attorney General’s Office (Procuradoria Geral da República, PGR) filed the Direct Action of Unconstitutionality by Omission No. 73, denouncing the Brazilian State for its failure to act (PGR..., 2022). Several hypotheses could explain this omission. One possibility is that the shifting political landscape led lawmakers in 2023 to deem such social protections unnecessary. However, this argument is untenable, as the infraconstitutional legislator remains bound by the constitutional provisions and cannot ignore the constitutional commitment signed with the nation. Another possibility might be the recognition of the primacy of reality, where automation is no longer viewed as a significant threat to the labor market, thus rendering protections unnecessary. As we will discuss later, the continued advance of automation has proved even more detrimental to workers, particularly those most socially vulnerable and with less access to education, resulting in digital exclusion.

2 Technological unemployment and mass layoffs: data analysis

Avoiding an exhaustive historical discussion, it is well known that since the dawn of the Industrial Revolution—starting with its first phase, symbolized by the steam engine—the adoption of machinery and the implementation of automated techniques have triggered waves of unemployment across 19th-century Europe. Regarding the experience of steam looms, Marx (2013, p. 335-337) argues that:

338 cotton factories shut down from 1861 to 1868 [...]. The number of steam looms decreased by 20,663; however, their output increased, with each improved loom producing more than its predecessor. Additionally, the number of spindles increased by 1,612,547, while the number of workers employed in the sector dropped

by 50,505. [...] World history offers no more terrifying spectacle than the gradual extinction of English manual cotton weavers [...]. Many of them died of hunger, while others languished in poverty with their families for many years.

Since then, technological advancements have only accelerated the replacement of human labor by machines, especially during the computer revolution of the 1990s (Castells, 2021) and more recently with the advent of the internet, what was termed the Fourth Industrial Revolution (Industry 4.0), and now, artificial intelligence (AI). As Schwab (2016, p. 11) points out, ‘in its scale, scope, and complexity, the Fourth Industrial Revolution is something [...] entirely different from anything humanity has ever experienced,’ far larger and more complex than all previous phases.

Several examples illustrate this substitution, making the phenomenon easier to recognize. One notable case comes from the services sector, particularly banking. Since the 1990s, banks have increasingly implemented ATMs in their branches, causing waves of layoffs in the industry. According to Sanches (2012), employment in the sector dropped by 37% between 1990 and 2010. However, this decline did not stop there. Data from the National Confederation of Financial Workers (Confederação Nacional dos Trabalhadores do Ramo Financeiro) shows that 4,329 jobs were lost in 2013, 5,004 in 2014, 9,886 in 2015, 20,553 in 2016, and 10,752 in the first half of 2017 (Banks..., 2019)⁴.

Queues at bank tellers, previously staffed by humans, were gradually replaced by queues at ATMs until users/customers became accustomed to the new system. Today, this transition goes largely unnoticed, as nearly all banking services can be performed through mobile apps. The banking relationship has become virtual, with most interactions happening either with an artificial intelligence system or via a pre-configured menu of commonly used options.

This same trend has been observed in the services sector, including super-market chains, department stores, and *fast-food* giants. Consumers can now place their orders directly at computerized kiosks, and although food is still prepared by humans, it is only a matter of time before these processes become fully automated as well. In supermarkets and department stores, customers can now scan their items or place them on a scale themselves, eliminating the need for a hired cashier to complete the purchase.

In the industrial and agricultural sectors, the technological shift is even more profound. According to the International Labor Organization (ILO, 2020), in

⁴ To explore how technology might affect the future of employment, we suggest reading Frey and Osborne (2013).

2008, Brazil had 8.5 million rural workers. By 2019, this number had dropped to 5.7 million, a reduction of nearly one-third of the rural workforce in just 11 years. Nearly a third of the rural working population was reduced. In the United States, human labor has also been significantly replaced by machinery. “Between 1979 and 1992, productivity in the industrial sector increased by 35%, while the workforce was reduced by 15% (Rifkin, 2004, p. 112)⁵.”

It is evident that the increased use of technology leads to job reductions, while simultaneously boosting production and profit. Studies also highlight the significant rise in social inequalities as a result of technological development (Arntz, Gregory, & Zierahn, 2016). A critique can be made from the outset: Until social protections, such as those outlined in Article 7, Sections I and XXVII, are prioritized, and while the goal remains the pursuit of accelerated, unequal, and disproportionate development, there will be no concrete improvements for the most vulnerable sectors of the population. Likewise, protective measures based on the principles of fraternity and solidarity will not be adopted.

To provide further examples, Silva (2022) discusses the case of Fiat, showing how the Italian automotive company reduced its workforce from 150,000 to 75,000 employees between 1980 and 1990, even as car production increased during the same period.

At this point, Harari (2018) raised a hypothesis reflecting on the waves of layoffs during the initial phases of the Industrial Revolution and suggested that, at the time, workers were absorbed into new activities that emerged. However, this situation led to a more pressing question in the 21st century: “What to do in order to prevent jobs from being lost; what to do in order to create enough new jobs; and what to do if, despite our best efforts, job losses significantly outstrip job creation?” (Harari, 2018, p. 58).

To address this issue from a statistical perspective, the World Economic Forum, in its 2016 report, stated that although technology created 2 million new jobs, during the same reference period, 7.1 million jobs were eliminated, resulting in a net loss of 5.1 million jobs (WEF, 2016). As shown, the capacity to create new jobs has already proven to be far smaller than the capacity to eliminate them.

In a more recent 2020 report, the World Economic Forum provided

⁵ When addressing the impact of automation on American agriculture, Rifkin (2004, p. 110-112) describes the case of how “John Deere, of Illinois, produced the first iron plow with a steel cutting edge in 1837 [...]. By 1920, 246,000 tractors were in use on the nation’s farms. [...] The mechanical, biological, and chemical revolutions in agriculture have put millions of farm laborers out of work. Between 1940 and 1950, human labor on the farm declined by 26 percent. In the following decade it declined again, this time by more than 35 percent. The decline was even more dramatic in 1960s. Nearly 40 percent of the remaining workforce was replaced by machinery in that single decade”.

a different perspective. Rather than focusing specifically on job creation or elimination, it analyzed the skills and tasks performed by humans, along with the rate at which they are being replaced by technology. A variety of tasks were evaluated, leading to the establishment of a median, referred to as ‘*all tasks*.’ It was concluded that, in 2020, 38% of tasks previously performed by humans were carried out by technology, and this replacement is expected to reach 47% by 2025 (WEF, 2020). In other words, nearly half of the tasks currently performed by humans will be handled by new technologies in the near future.

According to the same report, the most affected individuals will be those with the lowest qualifications—those who are socially and economically most vulnerable. In this context, the annual ICT Households 2022 survey conducted by the Regional Center for Studies on the Development of the Information Society (Cetic.br) provides crucial data on internet access in Brazil, reflecting on whether Brazilians have access to the internet, how they access it, the quality of that access, and the reasons for not accessing it, among other factors (TIC..., 2022). One of the conclusions from the Organisation for Economic Co-operation and Development (OECD) is the urgent need to expand mechanisms for training, professional reallocation, and education for workers, as well as to mitigate the impacts of job displacement and loss (Arntz, Gregory, & Zierahn, 2016).

Here, reference is made solely for illustrative purposes to the C2A report, which addresses internet users (expanded indicator). Based on the document, it can be inferred that among class A (with the highest household income), 96% of individuals use the internet. This number remains practically stable in class B, at 94%. In class C, this percentage drops to 83%, and in classes D and E (with the lowest household income), grouped under the same indicator, it falls further to 73%. In other words, over a quarter of the population in classes D and E do not have access to the internet, which is itself a sign of the exclusion these individuals face—particularly as the majority of job postings and selection processes are published and conducted online. At this point, this analysis has paid no consideration for the quality of internet access, or the time spent online, i.e., the data limits that the other 73% of individuals reported having, which presumably differs significantly from the indicators for classes A and B, for instance (TIC..., 2022).

Continuing the statistical analysis, it is important to highlight that the ILO holds the International Conference of Labor Statisticians (ICLS) every five years, with the goal of aligning the analytical frameworks with the official statistical agencies of its member countries, including Brazil. In this context, it is important to note that, for the ILO, the unemployment rate, while widely known, is not

the only concern that requires public action and policy. Equally alarming are the underemployment rate (people who, although employed, are underutilized), the discouragement rate (people who have given up looking for a job), and the in-work poverty rate, which represents individuals who, despite working, do not earn the minimum income necessary to escape poverty.

In Brazil, according to the latest Continuous National Household Sample Survey (PNAD Contínua) published by IBGE on May 31, 2023, there were 9.1 million unemployed people, 21 million underutilized workers, and 3.8 million discouraged individuals among those of economically active age, bringing the total number of people in socially vulnerable situations to 33.9 million. Additionally, the rate of informality in Brazil has been increasing, reaching 38 million people working without formal employment, likely without any social security or assistance benefits (PNAD..., 2023).

Although the intention here is not to establish a causal relationship with the data that follows, it seems appropriate to highlight another piece of information that underscores the need for attention to the most underserved populations. According to the latest published estimate, Brazil had 33.1 million people facing severe food insecurity, that is, experiencing hunger (Rede Penssan, 2022).

When analyzed collectively, this data reflects an extremely serious and urgent social crisis. On the one hand, there is a precarization of labor largely caused by technology, exemplified by platform-based business models that reduce labor protection (Antunes, 2020). On the other, there is a phenomenon beyond labor precarization, which is the rampant elimination of jobs and, consequently, the discarding of the people who depended on that work.

Although this study began with an unfulfilled constitutional premise of protection, the next section shall address other legal instruments and jurisprudential positions in order to demonstrate how this issue has been handled (or not) by state authorities.

3 Is legal protection enforced?

As previously mentioned, the Brazilian Constitution enshrines the protection of workers against automation and arbitrary termination as a fundamental social right. However, these protections have not been materialized from a legal standpoint. Considering the constitutional intent, the Brazilian State's omission on this issue is unjustifiable.

If ILO Convention No. 158 were incorporated into the Brazilian legal

system, it would establish that an employment relationship could not be terminated without “a valid reason for such termination connected with the capacity or conduct of the worker or based on the operational requirements of the undertaking, establishment or service“ (Article 4). It is important to highlight that, in its Article 13, the aforementioned international convention acknowledges the possibility of terminating employment relationships due to technological reasons. However, it stipulates that, in such cases, the company must take measures “to avert or to minimize the terminations and [take] measures to mitigate the adverse effects of any terminations on the workers concerned such as finding alternative employment” (OIT, 1982).

As a treaty addressing human rights issues, the convention must be interpreted according to the *pro homine* or *pro persona* principle, which seeks to prioritize the protection of the individual as prescribed by the regulation. “Within the field of human rights [...], supremacy does not necessarily lie with the (Brazilian) Constitution but with the norm *most favorable* to human beings” (Gomes; Mazzuoli, 2010, p. 12, free translation). Although all of the above interpretations could have been adopted at least since the ratification of ILO Convention No. 158, it was never effectively implemented in the country. Moreover, judging by the path STF is taking in the ruling of ADI No. 1625 (Brasil, 2023), it seems unlikely that it will ever be enforced.

Continuing the analysis of the regulatory framework, the Superior Labor Court (*Tribunal Superior do Trabalho* – TST) has historically held that mass layoffs should be treated differently from individual dismissals. Depending on the number of workers affected, such dismissals would no longer be viewed as a unilateral prerogative of the employer or a mere exercise of its discretionary right, thereby calling for union negotiation⁶. However, in 2017, with the labor reform (Law No. 13.467/2017), the Consolidation of Labor Laws (*Consolidação das Leis do Trabalho* – CLT) was amended to include Article 477-A, which stipulates that “individual, multiple, or collective layoffs without cause are equivalent for all purposes” (Brasil, 2017). Thus, the infraconstitutional legislator treated multiple or

6 For example, consider: “[...] According to the understanding of the Specialized Section on Collective Labor Disputes of this Superior Court, the mass layoff of workers, whose characteristics deviate from the normal parameters of labor turnover within the economic sector over a given period, does not constitute an employer’s prerogative right, thus requiring prior negotiation with the union representing the workers in question (TST-RO-1000191-61.2014.5.02.0000, rapporteur, Minister Kátia Magalhães Arruda, SDC, DEJT of 4/29/2016; TST-RO-6155-89.2014.5.15.0000, rapporteur, Minister Maria de Assis Calsing, SDC, DEJT of 2/26/2016; and TST-RO-60900-44.2012.5.13.0000, rapporteur, Minister Dora Maria da Costa, SDC, DEJT of 2/19/2016)” (Brasil, 2016, free translation).

collective terminations as equivalent to individual ones, meaning they could be carried out without the “need for prior authorization from a union entity or the conclusion of a collective agreement or collective labor agreement” (Brasil, 2017, free translation). In doing so, the legislator not only ignored the protections provided in Article 7, I, of the Constitution, but also extended the scope of unjustified or arbitrary terminations to cover all scenarios of termination.

Labor jurisprudence traditionally distinguishes mass layoffs from individual terminations because mass layoffs lead to collective and widespread effects that impact not just the workers, but society as a whole. Consider, for example, a city with 30,000 inhabitants where a large company decides, after investing in technology, to lay off 1,000 of its 1,200 employees. Such an action would not only affect the laid-off workers but also the city’s economy, which would be faced with a sudden surge of unemployed individuals, leading to a significant reduction in purchasing power that would negatively impact commerce and services throughout the region. However, it is important to reiterate that the legislator did not account for the different effects of individual versus mass layoffs. Instead, it equalized them.

In analyzing a specific case of mass layoffs after the legislative change mentioned above, TST ruled as follows:

[...] II. In this case, mass layoffs are uncontroversial [...]. III. Case law [...] has established the understanding that prior collective labor agreement is paramount for the legality of mass layoffs of workers. In the absence of such a procedure, compensatory damages are owed due to the collective nature of the harm caused. IV. The appeal was acknowledged and granted (Brasil, 2019, free translation).

The Superior Court ruled that, although terminations do not require approval through a union collective labor agreement, prior negotiation remains essential. While Article 477-A of the CLT exempted employers from needing union authorization or a collective rule, it did not eliminate the requirement for collective negotiations. In practice, according to this interpretation, even if negotiations are conducted but do not succeed, the company may still proceed with the mass layoffs. Moreover, if the company fails to engage in prior collective labor agreements, it is not barred from carrying out mass layoffs. The primary consequence of this corporate omission would be the occurrence of collective and widespread moral damage, for which compensation may be due⁷.

⁷ For instance, the following case can be cited: “Compensation for collective moral damage. [...] In this particular case, considering the factual framework defined by the Regional Court (the collective layoff of 44 workers, which resulted in the termination of the baggage and cargo loading and unloading

It appears that the Federal Supreme Court (STF), in deciding over Topic 638 on June 8, 2022, through RE 999435, ruled similarly, affirming that “prior union intervention is an essential procedural requirement for mass worker layoffs, which does not equate to prior authorization by the union entity or the conclusion of a collective bargaining agreement” (Brasil, 2022a, free translation). As is evident, STF also deems prior negotiation necessary, but does not require that this negotiation be fruitful for the mass dismissal to occur, which, strictly speaking, does not provide the necessary protection to workers.

Specifically, regarding automation, Bill No. 1,091/2019 seeks to regulate the protection outlined in Article 7, XXVII, of the Constitution. It introduces certain requirements, such as prior communication by the employer—which is not particularly new—and mandates union mediation for terminations (Article 5). Most importantly, it prohibits mass layoffs due to automation (Article 9).

However, although this prohibition represents concrete protection, the legislator provides an alternative, as often occurs in labor relations: if the company does not wish to comply with the prohibition (regarding mass layoffs), it may compensate the worker dismissed for technological reasons.

In this, there is a similarity with the solutions adopted in issues related to unhealthy conditions that contaminate the environment of work and the workers. Instead of effectively requiring the elimination of such unhealthy conditions, the option is to compensate the worker with a financial bonus. Rather than prioritizing their protection, the worker is indemnified, to the benefit of the company, which can carry on its economic activities by replacing the obsolete with a more efficient and profitable machine. This is the human being used as a tool, as a means, contrary to Kantian ethics (Kant, 2017).

Nevertheless, even this flawed bill—and others like it before—have not been enacted by the Legislature. As a result, mass layoffs for technological reasons can still occur without any obstacles today. Moreover, in a technical note on collective dismissal, the State Labor Department deemed as *reasonable cause* those based on technical reasons, including “technological reasons [...], automation of production tools [...], as well as the digitization of services” (Brasil, 2020, p. 4, free translation). It is striking that the body responsible for overseeing compliance with the Brazilian Constitution and laws, as well as international conventions, considers mass layoffs for technological reasons *reasonable*, seemingly contradicting

sector at the respondent’s base at Viracopos International Airport without prior union intervention), not subject to revision (TST’s Precedent 126), the amount awarded (BRL 500,000.00) is not excessively high to the point of being considered disproportionate (Brasil, 2022b, free translation).

the protection intended by the aforementioned Article 7, XXVII of the Federal Constitution.

Another potential measure is the application of labor protection mechanisms to influence economic decisions that mitigate the effects of technology (Ooi & Goh, 2019). According to Abbot and Bogenschneider (2018), various proposals have been analyzed in foreign literature, including: prohibiting the crediting of tax deductions for automated work; implementing a differentiated tax on automated companies (*levy of an automation tax*); and establishing differentiated social contributions to finance social security, particularly based on gross revenue (*additional taxes for social security*).

One approach to be studied in Brazil is the use of a differentiated tax burden for labor-intensive sectors, such as construction and transportation, among others. The Social Security Contribution on Gross Revenue (Contribuição Previdenciária sobre a Receita Bruta, CPRB), aimed at encouraging the maintenance and creation of jobs, could help combat informality in the labor market. The sectors benefiting from the CPRB include information technology (IT), communication technology (ICT), public road and freight transportation, metro-rail passenger transport, companies in civil construction and infrastructure, journalistic and broadcasting companies, as well as textile, footwear, leather, and vehicle manufacturing sectors.

As noted, the fragile and inefficient balance between automation and job protection calls for some form of intervention to restore this balance (Acemoglu & Restrepo, 2019). The dialogue between Tax Law and Labor Law offers a promising avenue for researching this field, which is heavily impacted by technology (Hötte, Somers, & Theodorakopoulos, 2022). Thus, new research and approaches will enable the identification of more effective and efficient alternatives for protecting employment against the obsolescence and devaluation of human labor in a technological society.

4 Environmental impact of work and unsustainable development

Considering the path taken thus far, it is worth highlighting that mass layoffs significantly impact the environment of work. This impact is both collective, when viewed from the perspective of the collective of laid-off workers, and diffuse, when considering the broader community in which the company operates.

Robots, artificial intelligence, and all forms of technological advancements designed to replace humans in their tasks, unlike humans, do not possess organic,

social, or cultural needs. Therefore, they do not need to take breaks in their workdays or take vacations, they do not need leisure, nor do they have consumption habits. While these technologies may lead to increased production and reduced costs for the company over time, the community in which the company is based experiences a decline in consumer activity due to reduced purchasing power. Additionally, the problem of workforce relocation arises, as the large number of unemployed individuals at once are not reabsorbed by the creation of new jobs.

In this context, we face diffuse environmental damage. Drawing a parallel with Article 225 of the Federal Constitution, subsection VI stipulates that “for the installation of a work or activity potentially causing significant degradation of the environment, a prior environmental impact study, which will be publicized, is required” (Brasil, 1988, free translation). The principle behind this is that any action with the potential to cause significant damage must be preceded by a study submitted to administrative oversight bodies for evaluation and possible authorization, if applicable. However, when it comes to the environment of work, this analysis has strayed from such interpretations, despite the fact that the protection involved is aimed at human beings. Companies are not currently required to carry out prior studies on the impacts of mass layoffs, even though, in themselves, such studies could be a valuable tool in collective negotiations for labor agreements or in assessing the legality of the actions (mass layoffs) to be taken.

From another perspective, this parallel was drawn by Tirole (2020, p. 50), who suggests that in these cases, the principle he refers to as “severance pay” could be applied. His reasoning is based on the following premises: (1) In the “social function of the company”, which must take responsibility for the effects of its activities, as explicitly provided in Article 170 of the Brazilian Constitution, emphasizing not only free enterprise but also the valorization of human (rather than robotic) labor, as well as social justice; (2) In the “social cost of unemployment”, which, according to the analysis of the French economist, is borne by society and by companies that do not practice mass layoffs, as they continue to bear the labor costs of payrolls that will revert, for example, to unemployment insurance for those who have been laid off; (3) In the fact that the “employee is not responsible for the technology”, which is established in Brazilian Labor Law under Article 2 of the CLT, meaning that the employer assumes the risks of its activities and should not penalize or hold employees accountable for its business choices; (4) In the application, by analogy, of the “polluter pays” principle, holding the company accountable for the collectively caused damage, as previously outlined; and finally, (5) In the punitive function of the State, establishing a “penalty for dismissals” (Tirole, 2020, p. 255).

Furthermore, an essential reflection is: what sort of development is human-kind currently experiencing? Technological innovations, it seems, only exacerbate social inequalities, which became even more evident during the pandemic, particularly in systems like education, to name just one example. Can we discuss sustainability without addressing the eradication of poverty? Current reality prevents any defense of development as presented, since it fails to reach or uplift everyone, further marginalizing the most vulnerable.

In analyzing theories of collective choice aimed at social well-being, Sen (2018) criticizes those that limited their informational base or dismissed the importance of interpersonal comparisons as a crucial variable. The author argues, for example, that Arrow's axioms failed to account for inequality and poverty, which, in his view, should be core considerations. By prioritizing the interests of the most disadvantaged, the collective choice would better align with the objective of promoting well-being.

When looking at famine [...], while it kills millions, it does not greatly affect the direct well-being of the ruling classes and dictators, who have little political incentive to prevent famine, [...] even though it is easily avoidable (Sen, 2018, p. 82, free translation).

As Sen points out, when examining famines, “[...] while it kills millions, it does not significantly affect the direct well-being of the ruling classes and dictators, who have little political incentive to prevent famine, [...] even though it is easily avoidable” (Sen, 2018, p. 82, free translation).

In this regard, the main point we sought to emphasize is that this issue has worsened over the years. The more technology advances, the more human labor is jeopardized. In fact, this concern had already been recognized by the framers of the 1988 Brazilian Constitution, who deemed it necessary to protect workers from automation, particularly because of the recognized social value that work holds in people's lives.

However, in the hierarchy of choices made by the State and Brazilian society, this protection has not been prioritized. This may have occurred because, according to Sen (2018), the most affected and vulnerable individuals were not consulted. The decision not to offer protection aligns with that of prioritizing investments in technological advancement over human development⁸. When

⁸ One example of this imbalance can be found in the resources allocated to business subsidies compared to the funding for social programs. According to the Ministry of Finance, from 2003 to 2016, subsidies embedded in credit and financial operations (for companies) totaled nearly BRL 1 trillion, surpassing what the government allocated to social programs (BRL 372 billion) during the same period—including electricity subsidies for low-income households, the ‘Minha Casa, Minha Vida’ program, and the ‘FIES’ student loan program” (Lazzarin, 2022, p. 18, free translation). It is also worth

addressing this vulnerability, beyond the legal frameworks discussed here, there is also an ethical imperative that should guide the actions of those responsible for providing protection, irrespective of any formal normative instruments.

It is true that, in an expression of the very infinity of otherness, the rights of otherness boast an infinite dimension: before them, I will never be free; my duty has no end there; It's a responsibility. But if the face exclaims "an order before which one will never be fully acquitted", it establishes, above all, "obligations towards the body", which, in its extreme vulnerability, primarily demands food, clothing, and shelter (Carvalho, 2021, p. 383, free translation).

The intention here is to offer a reflective pause—albeit late, yet hopeful—to bring forth an ethical responsibility that should drive action rather than omission, applying the duty of protection practically rather than just theoretically.

In his infinite search for otherness, Levinas (1999, p. 24) states that "the death of the other man puts me on the spot, calls me into question, as if I, by my possible indifference, became an accomplice of that death". The duty to protect arises before it becomes a right and is owed to those who need it. The call for protection places a burden of responsibility on the fortunate. May the omission of the State and Brazilian society no longer be a choice, and may indifference give way to the protection explicitly enshrined in the Constitution but, to date, not yet realized in practice.

Final considerations

From a multidisciplinary perspective, this analysis initially aimed to demonstrate the protective intent of the original framers of the Constitution, who sought to ensure that workers would not be arbitrarily dismissed and that their jobs would be safeguarded against automation, as outlined in Article 7, I and XXVII, of the Federal Constitution. However, the State failed to regulate or even adjudicate matters affecting these provisions, which relied on implementing legislation.

Given this omission, an investigation, supported by statistical data analysis, was conducted to assess the ongoing need for the promised protection. The results revealed that technological advancements have progressed at an even faster pace, leading to the elimination of numerous jobs as tasks once performed by humans are now being automated.

noting that the Workers' Assistance Fund (Fundo de Amparo ao Trabalhador, FAT) not only funds unemployment insurance and worker-focused programs. 40% of its revenue can be directed toward companies (Article 2 of Law No. 8,019/1990) through the National Bank for Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social, BNDES), with investments that are often applied to technology.

In this sense, the available legal framework and jurisprudential analysis, particularly regarding mass layoffs, were invoked, recognizing that Brazil fails in its duty to protect individuals displaced by technology in the workforce, leaving them in a state of increased social vulnerability.

Finally, based on the illustrated scenario, it was concluded that the lack of concrete protection for the indicated social rights allows mass layoffs for technological reasons to occur without obstacles in Brazil, creating a collective impact on the environment of work, which should be treated similarly to how the natural or ecological environment is addressed.

Thus, in a critical reflection on the ethical conduct observed in recent years, the type of development humanity is undergoing was questioned, as it exacerbates poverty, marginalizes, and excludes part of the population that lacks access to the technological world. This is, therefore, incompatible with the widely promoted premise of sustainability.

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Authors' participation

Methodology definition, critical analysis, survey, and literature review by Paulo Caliendo. Research problem proposal, bibliographic, jurisprudential, and legislative survey, text drafting, and revision by Plínio Gevezier Podolan. Both authors contributed to the development of the discussions on the topics addressed and the presentation of the final considerations.

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