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## GOVERNING ENGELS' PAUSE: AI AND THE WORLD OF WORK IN GERMANY

DIDEM ÖZKIZILTAN\*

As studies hint at potential human replacement by smart machines in the German labor markets (Brzeski and Burk 2015; Arntz, Gregory, and Zierahn 2016; Nedelkoska and Quintini 2018), the uncertain implications of a world of work with high AI penetration have triggered concerns within German society. In contemplating the AI-dominated future of work, scholars warn of a gradual transformation in labor markets, spanning decades, and potentially exacerbating unfair practices that lead to

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wealth disparities (Brynjolfsson, Rock, and Syverson 2017; Acemoglu and Restrepo 2018). This caution echoes historical parallels with the aftermath of the first Industrial Revolution in the mid-18th century. For more than half a century, workers faced low wages, technology-induced unemployment, harsh working conditions, and widening wealth gaps in the then-industrializing countries (Engels [1845] 1984; Castel 2003; Allen 2009). The inhumane living and working conditions experienced by the British industrial working class during this time were narrated by Friedrich Engels ([1845] 1984) in his pioneering book, *The Condition of the Working Class in England*. Following Allen (2009), and placing a particular emphasis on the mounting wealth inequalities, this era is referred to as “Engels’ pause”: a brief historical period, yet stretching over a lifespan of generations, in which the adjustment costs of swift technological advancement were borne by workers (Acemoglu and Restrepo 2018; Frey 2019; Crafts 2021). It was only in the mid-19th century, as states began to implement socioeconomic protections for workers, that Engels’ pause gradually ended, allowing workers in the industrializing capitalist societies of the West to benefit from technological progress in terms of income and living standards (Allen 2009; Frey 2019; Özkiziltan 2020).

Some scholars argue that the labor markets of the advanced capitalist orders are currently passing through a period of Engels’ pause spurred by the growing deployment of AI-enabled workplace tools (Acemoglu and Restrepo 2018; Frey 2019). In contrast to its historical counterpart (Engels [1845] 1984; Allen 2009), this process has not yet resulted in technology-driven mass unemployment or rapidly decreasing wages (Özkiziltan and Hassel 2021; OECD 2023). Nonetheless, for some groups of workers it has intensified inequalities and discrimination at work, diminished decent work prospects, and further tilted the balance of power in favor of employers (Özkiziltan and Hassel 2021). What is more, in the absence of adequate protection for workers, an AI-led Engels’ pause is also likely to exacerbate unfair and exploitative practices at work for an increasing number of workers, thereby fueling wealth disparities (Acemoglu and Restrepo 2018; Frey 2019).

While AI adoption in Germany has not yet resulted in noticeable wealth inequalities (OECD 2023), compelling evidence suggests that the country has already entered the initial stages of an AI-induced Engels’ pause. According to an analysis of the country’s labor market, from 2014 to 2018, digital skills have become increasingly essential for all job categories in Germany (O’Kane, Narasimhan, Nania, and Taska 2020). This trend is consistent with the fact that the adoption of AI in the workplace is on the rise, as the percentage of German companies with 20 or more employees using AI has increased from 9% in 2022 (Bitkom 2022) to 15% in 2023 (Bitkom 2023), with an additional 28% considering or preparing to use AI (Bitkom 2023).

Despite lingering concerns about AI leading to widespread job displacement, its increasing integration into Germany’s socioeconomic fabric has spurred the creation of new employment opportunities in science, technology, engineering, and mathematics (STEM) fields. This trend can be

attributed to the country's thriving AI start-up ecosystem (Agarwal 2023) and the increasing adoption of AI by German companies (Bitkom 2023). However, Germany faces a severe shortage of skills in the field of information and communication technologies (Duell and Vetter 2020), prompting businesses to increasingly rely on a migrant workforce with STEM qualifications. Indeed, from 2012 to 2022, employment in STEM skilled occupations among third-country nationals has surged by 32%, rising from 165,991 to 218,664 (Anger, Betz, and Plünnecke 2023). Yet, within the cohort of highly qualified workers, note that while Germans earn an average of 5,333 euros per month, those without German nationality earn 4,960 euros, and employees from the primary countries of asylum origin earn significantly lower at 4,394 euros on average, based on Federal Employment Agency (*Bundesagentur für Arbeit*) 2019 data (Leubecher 2019). What is more, migrant workers across Europe are more likely to be exposed to less favorable working conditions (Ronda Pérez et al. 2012), thus placing them in a more disadvantaged position vis-à-vis their native counterparts and employers. This situation is particularly alarming in Germany because of the increase in anti-democratic attitudes and far-right extremism (Zick, Küpper, and Mokros 2023), which may have serious implications for the rights and freedoms of workers of migrant origins.

The AI-induced Engels' pause seems to have also exacerbated existing power asymmetries in Germany's employment relations. Indeed, for instance, a series of recent court reports suggest that deployment of biometric technologies at work, particularly the collection of fingerprints and camera footage, has already started placing workers at a further disadvantageous position by increasing employers' control over the work and the workplace (Laboris 2020; Del Castillo 2021). The rise in precarious platform work in the country (Fairwork 2022), although involving only 1.1% of the workforce as main platform workers (Piasna, Zwysen, and Drahokoupil 2022), has also further disempowered workers (Huws, Spencer, Syrdal, and Holts 2017; ILO 2021). This situation is particularly concerning, as recent research indicates that the majority of platform workers in Germany are migrants. Furthermore, the number of workers joining platforms has grown during the COVID-19 pandemic (Fairwork 2022). This has potentially increased the power of platform companies vis-à-vis a group of workers who have little, if any, prospects of decent work opportunities in the traditional economy.

### **Navigating AI in the Workplace: Germany's Regulatory Approach**

The German Federal Government is using three main instruments to govern issues arising from the deployment of AI-driven workplace tools. The first is the European Union (EU) General Data Protection Regulation (GDPR) that took effect in 2018, which ensures the protection of personal data, and its sphere of influence extends to employment relations. Pursuant

to GDPR, the German Data Protection Act, Works Constitution Act, and German Telemedia Act place strict boundaries on employee monitoring and surveillance. These regulations require the approval of works councils for the employers' introduction and utilization of workplace surveillance tools (Eurofound 2020).

The second instrument is the Works Council Modernization Act, which came into force in 2021. This legislative initiative obliges employers to provide comprehensive information to the works council on the use of AI in the workplace. Additionally, it envisages works councils' involvement in the decision process as well as the consultation with experts about issues related to the introduction and use of AI tools designed to select applicants for the hiring process (BMAS 2021).

The third instrument devised by the Federal Government to navigate AI-related workplace issues is the German AI Strategy (hereafter referred to as the Strategy). This plan of action, adopted in 2018 (German Federal Government 2018a) and updated in December 2020 (German Federal Government 2020), is meant to maintain Germany's competitiveness in the AI field by ensuring AI's development and utilization for the common good and guaranteeing its ethical, legal, and cultural integration in society. The Strategy pays particular attention to the labor market challenges posed by AI and gives prominence to a holistic, human-centric, and user-centered approach in the development and deployment of AI workplace tools (German Federal Government 2018a).

In the Strategy, the government pledges to put equal emphasis on the workers' and companies' interests, highlighting the importance of skills development, social security, health and safety, societal participation, and co-determination for the workers in the transformation process. To achieve this, the Strategy suggests measures including, but not limited to, establishment of an AI Observatory to monitor AI's implications for the world of work and society; improvement of lifelong-learning opportunities for skills development; maintenance of the Partnership for Skilled Workers shaped in dialogue with the social partners, federal states, and other labor market actors; protection and regulation of workers' rights to co-determination on the issues related to introduction and utilization of workplace AI applications; financing and supporting company-based learning and experimentation spaces to test AI applications in the workplace; and setting up Centers for the Future to address the challenges related to demographic change and digital transformation (German Federal Government 2018a). In November 2023, the Federal Ministry for Education and Research (BMBF) updated its contribution to the Strategy (BMBF 2023b). "The Action plan AI by the BMBF" (2023a) sets the goal of making Germany and Europe a leading force in a world powered by AI and achieving technological AI sovereignty. To attain this objective, the BMBF has committed, among other measures, to consistently enhance AI skills development at all levels and to attract the best young AI talent from around the globe (BMBF 2023a).

The Federal Government is executing its AI strategy in areas related to the world of work mainly through four types of actions. The first is the 2019 National Skills Strategy, put into action to support active labor market participation. The initiative is designed to achieve this through the improvement of continuing education and training in a way that includes AI-specific skills and AI-supported applications. The second is the establishment of the Observatory for Artificial Intelligence in the World of Work in 2020 to investigate trends and forecast critical advancements to inform policy decisions. The third is the establishment of the Hubs for Tomorrow and Experimentation and Learning Spaces that aim to support companies and their employees to co-create and put into use human-centered AI-based systems. Finally, the fourth is the Civic Innovation Platform, launched in 2020, to involve the civil society in the development of AI applications for social good (Hartl et al. 2021; OECD 2024).

Note, too, that the EU AI Act, having come into force in August 2024, classifies AI systems deployed in employment, workers' management, and access to self-employment as high-risk, and mandates compliance with European standards within 24 months of the Act's implementation (Future of Life Institute 2024). Additionally, the forthcoming EU Platform Work Directive establishes the presumption of an employment relationship in platform work, protects platform workers from being fired based on decisions solely made by automated systems, prohibits digital platforms from processing specific types of personal data, and grants collective rights to all platform workers (Voet 2024). These transformative changes are likely to necessitate revisions to Germany's AI strategy and regulatory framework governing AI at work, although the specific adjustments remain uncertain as of the time of this writing.

### **The Social Partners: Divergent Interests**

The employers' and workers' organizations in Germany pursue distinct interests related to the governance of AI-driven workplace tools. The employers' interest in matters concerning the digital transformation of work and the workplace is revealed in the voice of the Confederation of German Employers' Associations (*Bundesvereinigung der Deutschen Arbeitgeberverbände* [BDA]). These interests mainly revolve around the imposition of the least burden on employers; the provision of appropriate re-skilling/up-skilling opportunities for workers; and the modernization of labor law as well as the workplace co-determination process in a way that ensures flexibility, profitability, and efficiency (BDA 2023a). In furthering its interests, the BDA organizes panels and workshops for companies and issues publications offering recommendations for employers and proposals to politicians (BDA 2023b).

BDA's interests remain unchanged in the context of Germany's AI strategy. In their statement submitted as part of the Online Consultation on the Federal Government's National Strategy for Artificial Intelligence, the

employers' representatives strictly opposed the following proposed actions: bureaucratic hurdles involved in the establishment and management of the company-based learning and experimentation spaces, extension of co-determination to each update related to AI applications, establishment of AI Centers for the Future, and additional duties imposed on employers for workers' skills training. According to the BDA, in terms of the issues related to AI at work, the decisive factor needs to be the workers' ability to effectively compete for employment opportunities in an AI-driven economy. In this regard, for instance, it welcomed improvement and implementation of the Partnership for Skilled Workers. The association also pointed out that the government's promotion and support of companies in the issues related to workers' further training is a necessary action yet to be considered (German Federal Government 2018b). The BDA's profit-seeking and risk-minimizing approach toward the digitally driven future world of work has long been sharply criticized by workers' representatives for employers' lack of a clear digitalization strategy and their heavy reliance on market forces (DGB 2015).

Trade unions in Germany, by contrast, have assumed the role of agenda setting in addressing and cushioning the issues related to the use of AI-powered workplace technologies (Haipeter 2020; Özkiziltan and Hassel 2021). "The focus must be on expanding human capabilities through AI, and not replacing people with machines. Only then," as German Trade Union Confederation (*Deutscher Gewerkschaftsbund* [DGB]) insists, "acceptance will follow" (DGB 2019: 3). Similarly, according to the United Services Trade Union (*Vereinte Dienstleistungsgewerkschaft* [ver.di]), "Progress should not be a threat, but a promise. . . . Otherwise, we do not need this progress" (ver.di 2019: 6).

Against this background of awareness, the German trade unions are demanding further actions in four critical areas on the matters related to the digital transformation of work and the workplace, including AI's anticipated disruption of labor markets. These areas are: 1) extension of social protection programs to include the new forms of work facilitated by digital technologies, 2) strengthening of the co-determination process on issues related to technological change, 3) modernization of education and vocational training systems to account for the requirements and prospects of the digital economy, and 4) protection of employee data to prevent digital worker surveillance and monitoring (German Federal Government 2018b; Özkiziltan and Hassel 2021). In pursuing these interests, German labor organizations have adopted three main strategies: organization of campaigns to recruit more members, activation of works councils, and promotion of workers' participation in workplace decision-making processes (Haipeter 2020).

### Discussion and Conclusion

This brief exploration of the ways an AI-induced Engels' pause is presently unfolding and governed in Germany's world of work offers two key findings

for discussion. The first is that the labor market implications of the adoption of AI-based technologies extend beyond the widely discussed cases of AI-led workforce optimization (i.e., task automation, labor augmentation, complementation) and the algorithmic management of work and employment relations (Özkiziltan and Hassel 2021). The aggravation of inequalities and discrimination at work, prompted by the growing employment of migrant workers with STEM degrees, appears to be a notable case illustrating the broader consequences of increasing AI adoption. This situation suggests that the increasing demand for a set of skills given the proliferation of AI-led technologies will not necessarily create decent job opportunities with good working conditions and equitable wages, even for higher-skilled workers. This observation highlights the importance of ensuring that the adoption of AI-based technologies is accompanied by robust policy interventions aimed at addressing broader socioeconomic challenges including, yet not limited to, promotion of equality, diversity, inclusion, and fairness at work.

The second finding is that despite the AI-led Engels' pause still being in its early phases, it has already started a perceptible shift in Germany's world of work. This shift is marked by an increase in instances of occupational inequalities, workplace discrimination, precarious work, and power asymmetries. These impacts are most evident among STEM workers and platform workers of migrant backgrounds. Moreover, as the deployment of AI-empowered workplace tools increases, exploitative workplace practices and diminishing decent work prospects are highly likely to become more pervasive across most of the skill and wage spectrum. In the absence of adequate protection for workers, this development could potentially give rise to overwhelming wealth inequalities and socioeconomic injustices in society, a scenario evocative of the Engels' pause experienced during the years of the first Industrial Revolution.

Despite this possible outcome, the German Federal Government and the social partners have taken little action to shorten the duration of an AI-induced Engels' pause. The government is tackling issues caused by the deployment of AI workplace tools through data protection acts, modernization of works councils, and the German AI Strategy. Although initiatives on data protection help address AI-led unfair and exploitative workplace practices regarding data collection and use, room for improvement remains, particularly in the platform economy (Hassel and Özkiziltan 2023), for the workers in this sector often face significant challenges related to their ability to assert their interests and have a voice (Fairwork 2022). This negligence on the part of the policymakers maintains and aggravates biases and power asymmetries at work for platform workers. The governmental action for the modernization of works councils, by contrast, is a good point of departure in loosening the grasp of the AI-induced Engels' pause over the labor markets. However, platform workers' exercise of their right to co-determination and works councils' right to be involved in



decisions related to the introduction and use of all sorts of AI-enabled workplace tools are issues that warrant further attention.

Finally, the German AI Strategy, despite its comprehensive and human-centered approach, remains rather future-oriented in its dealing with AI-related workplace issues. This means that many cases of unfair and exploitative practices at work, which become evident in the early phase of Engels' pause, fall outside the scope of governmental actions. This shortcoming is particularly concerning for STEM and platform workers who have a migrant background. Indeed, these workers are more likely to face unique hurdles related to language barriers, potential discrimination, and unfamiliarity with German labor laws and practices concerning the world of work. These factors may impact their level of participation and representation in works councils as well as the mobilization of their rights at work.

The German social partners pursue divergent interests in dealing with the workplace issues arising from the AI-induced Engels' pause. On the one hand, employers in Germany have adopted a profit-seeking and risk-minimizing approach, crystallizing their heavy reliance on market forces and strict opposition to any governmental action related to the extension of co-decision-making in AI-related matters. The trade unions, on the other hand, have assumed an agenda-setting role and in doing so have developed a heightened awareness toward many pernicious immediate and future socioeconomic and political effects of AI-led labor market transformations. However, these endeavours should aim to be more inclusive and diverse. Particularly, the promotion of occupational equality for STEM workers and the empowerment of workers with migrant backgrounds, including those in the platform economy, warrant additional attention from trade unions.

To conclude, societies' ignorance of the early signs of an Engels' pause is an alarming situation that potentially protracts the process and strengthens its hold over the labor markets. Germany is currently experiencing the early stages of this phenomenon, with clear manifestations among workers of migrant backgrounds in the STEM fields and platform work. Additionally, Germany is facing an increasing problem with the growth of right-wing extremism and anti-democratic attitudes, which may have serious implications for the rights and freedoms of workers of migrant origins. One effective strategy for combating discrimination is for Germany to maintain its commitment to promoting fair and inclusive labor practices that treat all workers equally, regardless of their background or origin. This approach will also make the country more attractive to highly skilled workers seeking new job opportunities in the digitalized world of work. The key to shortening the duration of an Engels' pause, in Germany and beyond, therefore, is a prompt and adequate response from the state and social partners, addressing the immediate and future damaging effects of workplace AI tools in a balanced manner. This response would also help to prevent anticipated AI-induced socioeconomic inequalities and maximize AI's benefits to societies.

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