DIGITALISATION AND AI:
WHAT DOES THE FUTURE HOLD
FOR LABOUR UNION?

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Abstract: The Covid-19 problem has hastened a pace of significant digitalization in economic production and services that had already begun. For the first time, AI and robotics are becoming autonomous and self-learning, with human-like capabilities. The need to examine digitalization and the future of work has grown even more urgent. Until recently, labour unions were the most powerful institutions representing workers. However, the increasing prospect of intelligent robots replacing humans calls into doubt the viability of labour union policy. This development jeopardises their conventional power bases, which rely on the participation of large numbers of salaried workers and their ability to halt production. This paper tries to analyse the issues that unions face in capitalist democracies in this setting. The premise that the digital revolution will eventually generate new, better jobs has been endorsed by the majority of research work on labour relations. We propose that we investigate an alternate scenario, namely, a digital revolution that results in mass human worker replacement and structural, technological unemployment, which could broaden our perspective, particularly in terms of public policy design. We believe that labour unions now play two critical roles. The first is to protect workers' rights and interests as the economy shifts from paid labour to automated-autonomous production; and the second is to change their primary mission from representing employees to representing the social rights of all citizens, particularly the material interests of laypeople.

Keywords: automation, artificial intelligence, future of work, union, labour.

INTRODUCTION

The globe has been dealing with a worldwide health catastrophe that has compelled governments all over the world to take unprecedented measures to halt the spread of the SARS-

CoV-2 virus (Covid-19 or coronavirus) and variations. Closing ground and air borders, closing schools and universities, shopping malls, production and manufacturing facilities, and ordering individuals to exercise social distance and undergo quarantines and full lockdowns are all examples of these activities. Companies in a variety of nations have been forced to adapt their working processes in order to protect their employees' health, which has resulted in remote employment, typically from home. Although many hi-tech companies had previously permitted employees to work from home on occasion, it was highly rare to find businesses that did so-on a full-time basis.

Companies aren't the only ones changing their business models; educational institutions have also shuttered their campuses and moved to online instruction. Doctors and nurses were required to safeguard themselves and provide remote healthcare services to those infected with Covid-19 and those in quarantine, which transformed the entire global healthcare system. Organizations have been compelled to adapt and invent new ways for their employees and students to work and learn as a result of this dramatic transformation. The coronavirus outbreak has hastened the use of digital technology to enable "remote living" (i.e., working, learning, and interacting using online technologies) for people to continue working, meeting, communicating, collaborating, learning, and accessing information. Through the acceptance and deployment of advanced technology, businesses are undergoing a rapid digital transformation. The "future of work" has moved faster than expected due to the quicker speed of deploying digital technologies and allowing alternative ways of labour. Many academics, analysts, and influencers have been drawn to these changes. This article focuses on how this faster workplace change is affecting labour unions in this environment. Four distinct observations can be made when looking at the various steps that governments and employers have tried to deal with the Covid-19 pandemic. The first is that digital technology allows for the completion of more jobs with less human effort. The second point is that while digital platforms allow people to work and earn money, they often lack the material security, job security, and fulfilment that many traditional occupations bring. The third point is that large

structural-technological unemployment is a realistic expectation, not a nightmarish vision. The fourth point is that governments will play a critical role in ensuring citizens' material security, which means we cannot rely exclusively on market logic, but must integrate it within a social framework. We'd want to talk about the role of unions in this setting. Between the mid-1940s and the mid-1970s, they were a crucial institutional participant in the developing world's political-economic order. They constituted major sectors of the workforce at the time, and many workers were covered by collective bargaining agreements. They supplied social services and had a big influence on macro social and economic policy: "they were, in reality, a component of capitalism's structure" (Lash, Urry 1987). Unions, on the other hand, have played a minimal part in the post-Fordist and neoliberal regime since the late 1970s. In most nations, union density has decreased considerably (Cohen, Haberfeld, Mundlak, Saporta 2003). Business corporations stifled unions, while government legislation limited their ability to organise. They were irrelevant to developing economic sectors like hi-tech and others. They lost influence and resources, and hence were unable to provide benefits and services to their members as they had previously (Luce 2014). Since the global economic crisis of 2008 and the growth of more technologically advanced kinds of employment, the subject of unions' function has resurfaced, especially when the vulnerability of vast populations of workers becomes apparent (Crouch 2019). In the domains of labour studies, sociology, and labour law, most of the scholarly literature on digital technology and the labour market has focused on platform capitalism and how it is linked with the gig economy. The gig economy is seen as the next step in the labour market evolution, and it is projected to serve as a transitional phase, or "grace period", between the existing economy and a completely digitalized economy. The Covid-19 epidemic, and the social distance measures that accompanied it, had a significant impact on the gig economy (Thorbecke 2020), which is built on interpersonal contacts mediated by a digital platform. Some governments have outlawed ride-sharing (Raiper 2020), and others have outlawed it entirely (Shahrigian, Guse 2020). The Covid-19 situation has brought to light the dangers and

anxieties faced by those who rely on gig platforms as their primary source of income (Paul 2020; Marshall, Barber 2020). Some gig economy platforms, on the other hand, have seen a significant surge in demand for work and employees. People have been driven to employ delivery services on a vast scale as a result of social distancing measures and widespread company closures (Cheng 2020). As a result, it appears that the gig economy's potential is more limited than previously anticipated. The Covid-19 situation, on the other hand, has had a much more dramatic impact, resulting in enormous job losses, layoffs, and unpaid leave for millions of individuals all over the world. Retail, hotels and hospitality, airlines, travel and tourism, athletic events, restaurants, theatres, and concerts have all been impacted significantly (Kelly 2020; Margit 2020). Since 1948, the United States has witnessed the highest rates of employment loss, 50 percent higher than during the 2008 financial crisis (Cox 2020) (Congressional Research Service 2021). Governments were put under a lot of strain as a result of these large layoffs. This was particularly evident in unemployment and welfare agencies, which had to deal with enormous volumes of requests in a short period of time. Because of the need to maintain strict social distance, governments have been quick to develop and deploy digital tools and solutions in order to continue to function and help their population during this crisis.

Major crises have traditionally been powerful catalysts for change, hastening innovation as well as the development and adoption of new technologies and ways of working. Following the 2008 financial crisis, the gig economy resurfaced in the professional sector, fuelled by global internet platforms like Airbnb and Uber. The coronavirus outbreak could also be a forerunner of rapid changes, fuelled by digital technologies that will impact every part of our life. Even once the coronavirus crisis is over, the current way of "remote living" may become the new standard for many organisations around the world. Massive layoffs, workers' inability to access their workplaces, and the augmentation and replacement of human labour by digital technologies, particularly Artificial Intelligence (AI), suggest that the current labour market changes may not be temporary, but rather a prelude to a deeper transformation that will force

millions of people to work in nonstandard jobs or face unemployment. The digital age has arrived earlier than planned and is speeding up, with the effect that human labour will be mostly replaced by automated labour.

Artificial intelligence systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions. As a scientific discipline, AI includes several approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimization), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems) (European Commission 2018).

Traditionally, the main institutions that represented workers have been unions. In this new environment, how can labour unions remain relevant? What contribution can they make in this new period, which may be marked by a steady decline in their membership? These are the key issues discussed in this article.

OBJECTIVES AND PRESUMPTIONS

It is necessary to state our assumptions and points of departure for this article before proceeding with the discussion: *a*) the purpose of this study is to analyse two major forthcoming problems that unions in capitalist democracies and post-industrial society will face. The first is the role of labour unions in the shift from a labor-based economy to one based on automated production. The second is labor's new perspective on how to

position itself as the jobless economy becomes a reality; *b*) the labour market scenario we've presented is the most dramatic, and it's still being debated. We believe, however, that unions must be ready for it. Scholars may not always agree on the scope of future work transformations, but there is broad agreement that they will be transformative (Rainey 2020); *c*) AI differs from prior technical advancements in that it provides autonomy and autonomous capabilities through the use of hardware and software that were previously unavailable.

METHODS

The goal of this study is to support the aforementioned objectives by examining the topic of job automation and its implications for the labour market. This is accomplished by combining two research methodologies: intuitive logics, a branch of scenario planning, and a thorough evaluation of the contextual environment during times of disruption and change. "1) improving understanding of the causal processes, relationships, and logical sequences underlying occurrences – thus revealing how a future state of the universe may emerge; 2) Challenging organisations' conventional thinking and prevalent views; and, as a result, 3) Strengthening decision-making processes in those organisations" (Frey, Osborne 2013; Wright, Bradfield, Cairns 2013).

To disprove long-held assumptions about the impact of sophisticated technology (AI and robotics) on jobs and the labour market, we apply the intuitive logics method outlined by Wright et al. (Wright, Bradfield, Cairns 2013). The intuitive logics method is useful in situations where previous experiences are interrupted or discontinued, as well as "A way of exploring alternative futures [...] in situations of extreme uncertainty when analytic and developmental approaches fail to capture the full range of possibilities" (Ramirez, Selsky 2016). The intuitive logics are also employed in this study to do a kind of "wind tunnelling" test on our main claim, as well as to establish a new agenda and how it might materialise in the short- and long-term future (Wayland 2017).

THE ON-GOING DEBATE CONCERNING TECHNOLOGY ADVANCEMENT AND ITS SOCIETAL REPERCUSSIONS

Any discussion of the implications of automation and AI for production and service operations must begin with a comprehensive overview of the impact of technology advancements on economic progress, as well as why the current advances have revolutionary implications. The debate about the effects of technology advancements on the job market is not a new one. John Maynard Keynes, a well-known economist, wrote about the economic and social conditions a century ahead of his time, as well as the path to get there, in early 1930. Since the beginning of the first industrial revolution, pessimistic conceptions of the future have accompanied the contemporary world, according to Keynes. Fear of the negative repercussions of economic development spawned two extreme movements: reactionaries who sought to block progress by avoiding any active actions to improve the economy, and revolutionaries who saw no other option than to use violence to change society. In contrast to these voices, Keynes envisioned a hopeful but realistic future. He considered the economic and social difficulties of his period as "growing pains of over-rapid transitions" (Ramirez, Osterman, Gronquist 2013), rather than diseases. Capital accumulation and technical advances, according to Keynes, would enable a level of production much beyond what the rising population could consume. In addition, he anticipated that sophisticated technology would render a portion of the human employment obsolete.

However, he said that this would not be an issue because people would work fewer hours and for the sake of their wellbeing rather than their financial stability. Growing automation led to optimistic views of new possibilities that freed workers from their routine jobs, while concerns were raised about workers' health, structural unemployment, and other issues. The debate about technological leaps and the future of society resurfaced in the 1960s when growing automation led to optimistic views of new possibilities that freed workers from their routine jobs, while concerns were also raised about workers' health, structural unemployment, and other issues. Automation funds,

which were to be cooperatively administered by unions and companies to support workers during this transition, were one possible answer (Keynes 1932). "[...] new technologies [...] will enable only one person employing cutting-edge technological instruments to complete the work that currently demands ten people or more", wrote David Ben Gurion, the founding father of the modern State of Israel, in December 1969. "And, in my opinion, it necessitates a full revolution in all occupations, and it is dependent on the government", says the author (Kennedy, Plaut 1962). Based on the literature and data we reviewed, we believe that today's dramatic technological advancements will inevitably result in widespread change, accompanied by two types of strains: temporary strains, which characterise the transition phase from the current economy to a fully digital economy, and structural strains, which refer to endemic, long-term social issues that the digital economy is likely to cause. Different interventions are required for each type.

WHAT IS THE DEFINITION OF A JOB AND HOW CAN IT BE AUTOMATED?

Understanding the extent of this change and the solutions we propose necessitates a thorough understanding of job automation. Understanding the types of tasks humans complete for each job and dividing them into a sequence of actions, and then estimating the level of automation that could be applied to each work, is a popular approach to this issue (Gurion 1969). Because a person's job usually includes several sorts of tasks, "the effect of technology on job design rests on a substitute-complement continuum", as Gibbs (Decker, Fischer 2017) put it. As a result, whether done at home or at work, the idea of automation can be applied to a complete job or merely to individual tasks within that employment (Gibbs 2017; Brandes, Wattenhofer 2016). Technology is threatening an unprecedented number of employments, including many skilled and non-manual jobs that were previously thought to be immune (Yeates 2013). Routine and non-routine activities are examples of such tasks (figure 1). Until date, regular tasks (physical or cognitive) that are more
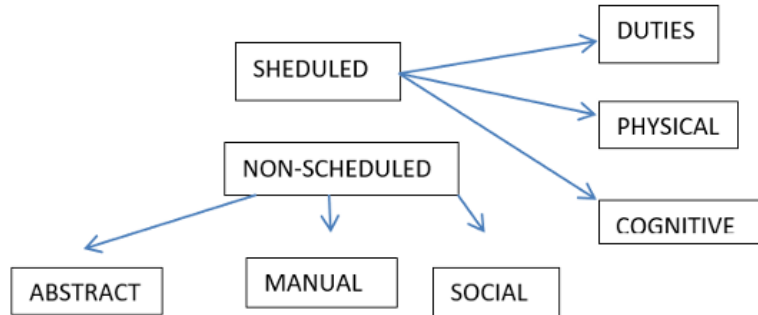
Fig.1. *Types of Duties in a job.*

easily mechanised have mostly replaced human labour. However, rapidly expanding AI technologies have begun to replace human labour, even for non-routine tasks (social and abstract), which were previously thought to be more difficult to automate (Cameron 2017; Sorgner 2017; Berg, Buffie, Zanna 2018). The evidence now favours the replacement theory more than ever. Because of its potentially enormous scope, the current development of automation is revolutionary. Automation today includes not only routine (physical and cognitive) but also non-routine jobs, allowing for the completion of various tasks and activities with little or no human intervention or oversight (Brandes, Wattenhofer 2016). The rise of new computer technology that allows for the treatment of large amounts of data has opened the way for AI and machine learning as a main driver of automation (Gibbs 2017). Today's AI-enabled hardware allows robots to have delicate and significantly safer interactions with humans when working alongside humans (Gurion 1969). Robots that provide personal care, for example, are service (social) robots that operate alongside humans. Hospitals all around the world have started to deploy and use robots to provide remote care and treatment to coronavirus patients, providing for continuity of care while also assuring the safety of medical and public health staff (Hammershoj 2019). This type of robot has a significant chance of developing into self-contained devices that will eventually take over human labour.

Alternatively, as an author and Salomon (Okyere, Forson, Gaisey 2018) describe it, the new automation technologies are "Labour displacing" since they "Reduce labour's share of aggregate output.

APPRECIATION OF REVOLUTIONARY TRANSFORMATION

Advanced economies are witnessing a significant surge of technological transformation that could have far-reaching social consequences. The fourth industrial revolution, which began in 2013, is currently affecting the global economy. The use of modern technology such as AI, robotics, and the internet of things to automate chores and occupations characterises this revolution. For the first time, machines (hardware and/or software-based) are becoming autonomous and capable of learning.

Prior to 2013, the goal of emerging technologies was to replace people, in contrast to past cycles of technical advancement in which technology was envisioned as supplementing people (Gurion 1969). Since 2013, new technologies have been able to provide new "superhuman" capabilities that boost productivity, efficiency, and flexibility in ways that people cannot (Gurion 1969) (Autor, Salomons 2018; Garu, Indri, Bello, Sauter 2018). The result is that more human workers are replaceable, and hence retraining the workforce to adapt to new industrial processes is a far higher challenge (Young, Sen, Kleinberg, Anderson 2020). We are in the midst of a severe structural-technological labour shortage: "This time, new emerging jobs may not be sufficient to compensate for occupations threatened by new technology" (Gibbs 2017).

Some recent publications argue that augmentation is considerably more plausible than substantial job substitution due to technology (Okyere, Forson, Gaisey 2018; Novakova 2020). This research should be viewed with caution because the data was collected prior to 2007, when AI technology was not yet accessible for commercial usage and robots were simpler than they are now (Bessen 2017).

PROGNOSTICATIONS ABOUT JOB AUTOMATION

So far, we've looked at two competing perspectives on the impact of automation on jobs: job replacement and work augmentation. The replacement theory foresees "the collapse of the 'full employment' norm to which all developed economies have grown accustomed". "We are likely to confront severe instability as vocations and industries are disrupted all over the economy before the hoped-for 'new jobs' arrive in sufficient numbers," says the augmentation thesis. These diametrically opposed forecasts have spawned a plethora of studies examining the relative likelihood of human replacement or augmentation by automation. These studies cover the overall labour market, as well as individual segments or jobs within it. Frey and Osborne presented the first thorough assessment on the potential and likelihood of more than 700 different vocations being automated in 2013 (Rainey 2020). Brandes and Wattenhofer (Gibbs 2017) expanded on their work by examining the tasks that make up each job and evaluating the likelihood of each becoming automated. Researchers used O*Net historical data from 2001 to 2015 to show that jobs with a high risk of automation had already begun to exhibit a reduction in demand for employment during this time (Gibbs 2017; Bryson 2019). This was also proven on a national basis (McLean 2015; Berrebi, Shraberman, Yarin 2017), albeit with local variations.

Other studies have concentrated on specific fields and industries, whereas these two analyses provide a high-level assessment of the potential of automation. The most probable industries to be automated are those that produce mass quantities of goods, and their people are more likely to be replaced by AI-driven industrial robots (Acemoglu, Restrepo 2018). On ocean rigs, the oil and gas industry has begun to deploy advanced automation technologies that decrease the need for human labour (Devold, Fjellheim 2019). Knowledge workers (occupations that require a large amount of data) have a great potential for increased efficiency through AI, which would allow the automation of important regular procedures (Naik, Bhide 2014). For example, AI and robots may be used to automate diagnosis, screening, and even counselling procedures in the medical and

clinical fields. More than 64 AI solutions to assist physicians have already been approved by the US Food and Drug Administration (Benjamens, Dhunnoo, Mesk 2020). Many tasks and tests in the medical imaging sector can be automated using AI for picture recognition (e.g., pathological testing) (Naik,Bhide 2014). AI technologies have been employed to aid and supplement the job of public health experts and medical practitioners for screening and diagnosis as the Covid-19 epidemic has spread (Schuller, Qian, Liu, Zheng, Li 2020). Other fields will be transformed by automation and AI, including the function of governance in organisations, particularly human resources, where AI and robotics may render human management supervision and guidance redundant, as well as the need for traditional human resource recruiting functions (Stiglitz 2014). Another industry that could benefit from AI and robotics is banking, which could use it in a variety of occupations and roles, from call centres to front-desk tellers (Dirican 2015), with predictions that AI will replace 70 per cent of front-office jobs (tellers, loan officers, customer service, and so on) by 2030 (Crosman 2018). As a result, it appears that automation and AI will have a massive impact across numerous industries, and will likely reach domains that were previously thought to be immune. This will put entire populations' employment prospects at jeopardy.

THE (IR) IMPORTANCE OF AUTOMATION EDUCATION AND TRAINING

Education, training, and up skilling are often thought to be a panacea for the prospect of job loss brought on by technological advancements. A higher level of education and training is thought to be associated with a lower risk of long-term unemployment. Unskilled and low-skilled workers in industrial factories, according to this viewpoint, are more vulnerable to automation since the repetitive tasks they perform are the easiest to programme and automate using software or robots (Gurion 1969; Ghimire, Skinner, Carnathan 2020). Furthermore, positions requiring advanced abilities are more difficult to automate
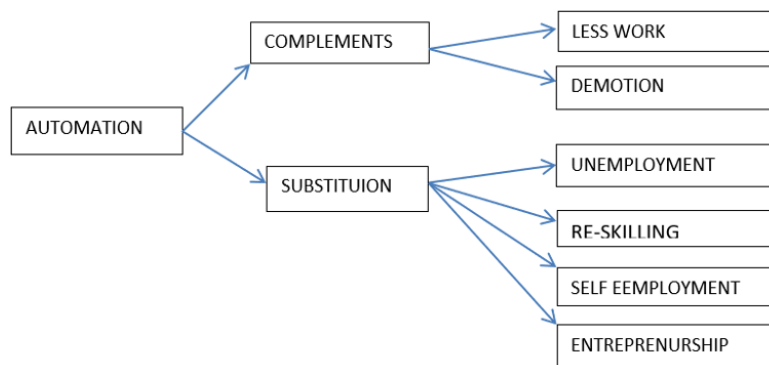
Fig. 2. *Schematic Diagram of Automation, It's types and its Impact.*

than jobs requiring intermediate skills (Decker, Fischer 2017). Not only does training matter for the types of people and their talents, but it also matters for the types of occupations. People who work in high-risk or low-risk jobs are more likely to gain new skills and training than those who work in medium-risk jobs, according to Sorgner (Cameron 2017). These actions are taken by the former group as a self-preservation measure to lessen the likelihood of being replaced by automation. Soft talents that are harder to automate and more crucial for innovation (e.g., creativity, abstract thinking; see figure 2) are more prevalent among workers in low-risk jobs (Berg, Buffie, Zanna, Robots 2018). They are also inclined to experiment with self-employment and the entrepreneurial paradigm. To summarise, we still don't know what kind of education or training would be most effective in reducing the risk of automation Sorgner (Cameron 2017). We may, nevertheless, conclude that positions with the lowest risk of automation are those that need "deductive thinking, originality, communication, training, problem-solving, and reading and writing" (Decker, Fischer 2017), as well as training humans to interact with and work alongside AI and robotics (Berg, Buffie, Zanna, Robots 2018). Nonetheless, as in the twentieth century (Susskind 2020) education alone will likely cease to be the finest investment and the key to our social mobility.

AUTOMATION'S SOCIAL RAMIFICATIONS

Due to improved technology that renders human labour superfluous, structural-technological unemployment is a persistent situation of a labour market that does not produce enough jobs to meet demand (Susskind 2020). Because labour has been a vital institution of modern civilization from the beginning, structural unemployment may be a threat to sophisticated societies. Work has characterised the modern human mentality in addition to providing for material subsistence (Costea, Crump, Amiridia 2008) According to deprivation theory, job is necessary not only for financial and survival purposes, but also for psychological and social functions such as a feeling of purpose, identity, social status, and the maintenance of social relationship (Budd 2011; Jahoda, Lazarsfeld, Zeisel, Marienthal 1933; Jahoda 1981). "First, employment imposes a time structure on the waking day; second, employment implies regularly shared experiences and contacts with people outside the nuclear family; third, employment connects individuals to goals and purposes that transcend their own; fourth, employment defines aspects of personal status and identity; and finally, employment enforces activity" (Jahoda 1981). As a result, widespread job loss could have a variety of consequences for individuals and society as a whole. First and foremost, automation may reduce social mobility by causing people to be downgraded at their existing occupations or transferred to lower-level jobs in a different industry (figure 2, Cameron 2017). Furthermore, displaced workers may discover that retraining, re-skilling, and re-educating themselves in order to enter other industries requires time and money, which they may not be able to afford (Stiglitz 2014). Increased physical and mental health concerns (Patel, Devaraj, Hicks, Wornell 2018), loss of self-esteem and confidence in their professional abilities (Ivanov, Kuyumdzhiev, Webster 2020), as well as worse family connections and even family breakups (Doiron, Mendolia 2012; Kalil 2005), are all possible consequences of job loss. People who lose their jobs as a result of technological innovation may struggle to preserve their social position and self-worth while their possessions and income deteriorate (Stiglitz 2014). Furthermore, Sorgner (Cameron 2017)

dismisses the expectation that they will find new livelihoods, citing a huge increase in self-employment as a result of those who were replaced by automation starting their own businesses. These enterprises, on the other hand, are not growth-oriented and provide nothing in terms of employment, innovation, or market value (Cameron 2017) Automation and AI have different consequences on different demographic groups, which could exacerbate social unrest. In general, technological innovation exacerbates inequality by displacing lower-skilled individuals and reducing demand for their services (Sorgner 2017; Stiglitz 2014; DeCanio 2016).

Escalating unemployment rates among the middle and lower classes have resulted in rising social and political instability, as shown in the 2016 US elections and Brexit in the United Kingdom (Mosco 2017; Judis 2016). The "arguments for technological optimism do not work", according to a group of researchers from the International Monetary Fund, implying that the present wave of automation technologies would destroy more jobs than it creates (Sorgner 2017). As a result, we anticipate high rates of structural-technical unemployment (as opposed to the more common short-term frictional or cyclical unemployment (Janoski 2014). As the possibility of humans losing their employment to automation rises, this threat is already being felt around the world, causing anxiety, distrust, and resentment (Thomas 2017). So far, we've shown how AI and robotics could have a significant impact on the future of work and future generations' well-being. To round out our examination, we'll look at the two key forces that shape the labour market: employers and unions.

EMPLOYERS' DESIRE TO AUTOMATE WORK

Because employers have an incentive to do so, automation of production and service processes may triumph. "Companies could attain more profitability and sustainability only by following two options: lowering expenses or maximising value"(Dirican 2015). The ultimate goal of employers is to lower the cost of each work while improving productivity (Okyere, Forson,

Gaisey 2018). As automation and AI grow more common, this conundrum may be resolved because AI and robotics are predicted to reduce costs while also increasing output. The financial crisis of 2008, for example, hastened the adoption of new technologies since businesses were forced to optimise and re-engineer their business processes in order to participate in the digital revolution (Dirican 2015). Gutelius and Theodore (2017) discovered that the US economy grew faster than the labour market after the Great Recession of the previous decade. Companies are motivated to save expenses in three ways. The first is to lower not only the need for workers who perform regular tasks, but also the number of highly skilled workers who are paid well (Stiglitz 2014). The promise of decreasing costs associated with the employment cycle, such as searching for and recruiting new employees, or the shadow costs that result from labour costs being significantly higher than the actual compensation given to employees (Gurion 1969; Decker, Fischer 2017; Stiglitz 2014) is the second incentive.

The third motivation is to cut costs as a result of their human workers' "malfunctions" and limits. Machines do not go on strike or require managerial attention, despite the fact that they may break down and incur a large maintenance cost (Decker, Fischer 2017; Stiglitz 2014). Industrial robots are built to be dependable and durable, allowing them to work continuously for 24 hours a day, seven days a week (Autor, Salomons 2018) Automation eliminates practically all uncertainty and improves the end output by reducing differences in task performance that exist with human workers (Decker, Fischer 2017). According to Qureshi and Syed (Qureshi, Syed 2014) using robots can save employers up to 65 per cent on labour expenditures while also allowing them to keep their businesses running without having to manage human shifts. They went on to say that robotics is playing an increasingly important role in the service industry, particularly in industries like healthcare, where employees who work in toxic surroundings may be replaced by robots who can perform the same jobs without the hazards to their health. As a result, we argue that various streams of logic are driving companies to replace human work with robotic labour and AI.

ARE LABOUR UNIONS A VIABLE OPTION?

Employers and employees have divergent interests, and "this relationship is inevitably hostile" (Durrenberger 2007). Since the dawn of industrial civilization, unions have been regarded as the primary defenders of workers' rights. Workers have used unionisation to strengthen their bargaining power with employers. The union movement's main purpose is to "organise workers for concerted action in support of their interests in order to redress the power imbalance between those who contribute labour and those who control the conditions of its use through their ownership or administration of productive resources" (Durrenberger 2007).

This comment illustrates three essential assumptions: *a)* employees should organise in order to gain a better bargaining position with their employers, *b)* the role of unions is reactive, and *c)* workers cannot rely exclusively on their employers to advocate their interests, but must do so on their own. The primary aims of labour unions are to represent workers' economic interests and to express workers' views, thereby contributing to work democracy and justice (Luce 2014; Freeman 2014). With time, they've broadened their responsibilities to encompass social services like pensions (Ebbinghaus 2011) and healthcare. As a result, their activities affect not only their own members but also all employees, as seen by their role in the institutionalisation of the minimum wage (Lichtenstein 2013) Unions have so served as more than a tool to represent the restricted economic interests of specific groups. They have influenced the entire economic system as a political force and an institutional player. As a result, individuals could have a big say in how the future labour market is designed. Unions have also shown that they are capable of responding to major economic shifts and delivering solutions for workers. They were powerful as long as they kept up with economic and institutional changes and offered solutions to their constituents. They were most successful as part of the bargaining tripartite process with employers' associations, which was sponsored by the state, from the 1930s to the 1970s. The role of unions in a "managed" or "organised"

capitalism (Lash, Urry 1987) was crucial. When unions ceased to be responsive, they also ceased to be relevant.

Since the 1970s, for example, unions have been unable to respond to rapid changes such as globalisation, the introduction of advanced technologies, labour market transformation (Luce 2014), or flexible employment arrangements (Ibsen, Tapia 2017; Luce 2014; Nissim, Vries 2014).

As a result, the ability of unions to adapt to changes and difficulties is critical to their survival. They have been pursuing "revitalization" and "renewal" tactics since the 1990s, owing to the lengthy crises they have been experiencing. These included tactics such as recruiting new members, organising workplaces, internal restructuring, forming coalitions with other social movements, partnering with employers (Bennett 2013; McIlroy 2008), and engaging in political action to influence higher power centres (e.g., political parties, legislation, and state institutions) (Frege, Kelly 2003). However, such revival and regeneration measures are solely intended to address the problem of non-traditional employment and the gig economy. Among them include the cultivation of shared class consciousness among digital employees, the formation of a transnational digital workers' trade union, and the use of workers' online presence to protest against or even disrupt the operation of digital platforms (Graham, Isis, Lehdonvirta 2017). Opening unions to self-employed workers (a term that suits the legal status of individuals hired via platforms), forming a self-employed workers' union (Cheng 2020) legal help for non-organized workers are all other possibilities. Agenda-setting efforts that support workers' rights, as well as advocating for standard and fair workplace conditions (Groen, Kilhoffer, Lenaerts, Mandl 2018).

Given the possibility of mass unemployment, one may legitimately anticipate scholarly literature to address the function of unions in the face of the ongoing and coming change. Unfortunately, there is no mention of this topic in the literature. We discovered no discussion of the role of unions in dealing with significant structural-technological unemployment in over fifty scientific studies dealing with automation and how it affects jobs. We didn't uncover anything on how unions deal with structural-technical employment in certain departments or

industries, either. There is some literature on the effects of au-
tomation on labour relations in the 1950s, which is interesting.
Ford Motor Company, for example, mechanised its manufac-
turing process to reduce its reliance on unionised workers who
might strike. Another example is union employees' proposal to
decrease the workday from eight to six hours due to concerns
about widespread automation reducing the need for human la-
bour (Pietrykowski 2019). Typically, unions regard the effects
of automation and AI as a source of friction, with technology
contributing to technological frictional un employment, in
which people are unable to re-enter the technologically evolv-
ing labour market because they lack the necessary skills. Unem-
ployment, in this opinion, can be solved with the correct train-
ing programme and investment. The current literature on tech-
nology's impact on unions focuses on the rise of digital plat-
forms and the gig economy (Crouch 2019; Prassi 2018; Wood-
cock, Graham 2020), as well as the challenges it poses to unions'
ability to mobilise platform workers (Graham, Isis, Lehdonvirta
2017; Gegenhuber, Scubler, Reischauer, Thater 2021; Unter-
schutz 2021). The literature also examines how unions might
use AI to reach out to marginalised employees, such as employ-
ing chat bots. Finally, it discusses initiatives by workers within
huge technological businesses to form unions. One of these is
Amazon, particularly its warehouse workers, who are subjected
to intense digital surveillance and poor working conditions
(Cattero, Onofrio 2018). The potential that manufacturing and
service processes will require a substantially smaller workforce
has been overlooked in the large literature about the emerging
problems facing unions.

IN THE FACE OF A JOBLESS ECONOMY, UNIONS MUST ADAPT

If unions are to remain relevant, they must develop their
strategic competence and recast themselves as learning organi-
sations more than ever before (Hyman 2007). Real learning is
defined as the ability to break free from restrictive patterns
(Huzzard 2001), hence we propose that unions adopt a new

paradigm and expand their mission beyond representing workers to include all people' economic and social rights. This transformation, however, can only happen gradually. We'll talk about two scenarios: the near future and the far future.

In the foreseeable future

We urge that unions take the following seven steps in the near future: *a)* conducting research. This entails building or growing specialised research divisions to investigate the economy's increasing changes and trajectory. We urge that unions who currently have research departments use approaches like futurism and long-term planning, which are used by many organisations throughout the world today; *b)* technology experts on board: Unions should hire technological experts to their management teams in order to build a deeper and broader understanding of the possibilities presented by new technologies, rather than settling for general future scenarios. Recently, it was discovered that a lack of digital and technology understanding on corporate boards reduces the success of a company's digital strategy (Pearce 2018); *c)* encourage an augmented workforce: Unions should empower workers in industries where human labour is not totally replaced by automation. Unions should identify industries and jobs that are likely to remain dominated by human labour, organise unorganised employees, strengthen worker status, and improve working conditions; *d)* defend employee health, safety, and privacy in the age of AI. Unions should advocate for workers' rights to health, safety, and ethics in companies that are automating. Workers who use cutting-edge technologies in the office are likely to lose part, if not all, of their privacy while at work since they will be observed and monitored by a slew of sensors that collect data in order to improve and optimise their work (Decker, Fischer 2017). The digital revolution will have an impact on these complex concerns, and workers cannot rely on their companies or state rules to protect their rights; *e)* managing dignified retirement: In workplaces where human labour is guaranteed to be replaced, unions must advocate for acceptable retirement circumstances for

employees. In such circumstances, unions should redirect their bargaining efforts away from useless fights against dismissals and toward achieving the finest retirement compensation and retraining for workers to help them explore new career options. This is known as "out skilling", and it is a relatively new strategy that organisations throughout the world have begun to give to employees who "don't have a future at [the] company" (Horn 2020); *f)* promote re-skilling and up skilling: This entails working with companies and governments to develop up skilling and re-skilling programmes for people whose jobs are at risk of being automated. The idea is to make it easier for them to be re-assigned to industries and jobs that are less likely to be automated, or to promote their conversion to other roles with the same company.

Join ethical AI committees – nowadays, companies that are integrating AI into their processes and systems are encouraged to form ethical AI committees or construct an ethical AI framework based on their fundamental principles (Porte 2021). Unregulated AI implementation can result in well-known difficulties and hazards related to bias, fairness, liability, and privacy, among other things. According to Corrine Cath (Cath 2018), "around the globe, industry representatives, governments, universities, and civil society are debating" this, but the unions are the only social actors that are not participating. As a result, they want to be a part of the discussion and consideration, while the main goal is to ensure that AI adoption does not jeopardise employees' rights or dignity, and that it is done ethically.

In the far future

Unions can only maintain their relevance in the future, when a jobless society may become a reality, by adopting a new vision. They should shift their principal mission from representing employees to representing all citizens' social rights. Modern citizenship, according to Thomas Marshall, is built on three tiers of rights. The first is civil rights, which are mostly legal and protect individual freedoms such as freedom of expression and religion, as well as the right to own private property. The next

set of rights is political rights, which provide the opportunity to elect and be elected to sovereign institutions that make key decisions. In order to address these issues, the ETUC Executive passed a resolution on fair digital work[1] in 2016. Its goal was to provide guidance and direction to national level affiliates and European industry federations, allowing them to participate more actively in policy debates surrounding digitalisation, develop their own positions, and pay attention to the changes triggered in various sectors by the deployment of new digital technologies and business models that were (or appeared to be) "disruptive" to traditional business and work practises. Finally, the most advanced layer is social rights. Citizens are provided with material security as a result of these measures. Everyone has the right to adequate nutrition, healthcare, education, transportation, and other services (Marshall 1950). Political and social rights, among other things, have been obtained in the past as a result of pressure from worker groups, primarily organised workers. Unions in Scandinavian nations, for example, have not only helped to establish these rights, but they have also provided welfare benefits such as pensions and unemployment insurance. These rights may be jeopardised if mass employment ends. A jobless society might deprive the working class of structural power, turning former employees into liabilities for companies and welfare expenditures for governments. Corporations are already pressuring governments to slash taxes, which could result in more cuts to welfare budgets and a widening of the already widening social class divide (Morgan 2014). In this environment, the role of labour unions as representatives of laypeople's material interests is critical. They have the ability to organise and motivate individuals to promote critical solutions to the challenge of citizen material security. Many jobless persons will be exposed to the hazards of poverty if this is not done, and if no other institutional safeguards are in place. Emerging technologies like AI integration, robotics, and the internet of things will surely boost future prosperity. However, there are complex ethical, legal, and security issues to be resolved, and the long-term impact on employment is unknown, including the widespread talent gap caused by mismatched skills, which is expected to result in poor wage growth and exacerbate

income inequality in both developed and developing economies. As a result, every country must improve and strengthen its digital infrastructure, cultivate a larger talent pool with advanced digital skills, provide intensive up-skilling and retraining programmes for potentially displaced workers, and ensure that a thoughtful regulatory framework is in place to address the challenges and give humans the best chance against the machine.

In this scenario, unions should consider moving their primary focus from representing employees to wide social movements championing the following agenda: *a*) unions should be open not only to employees and self-employed people, but also to individuals who are unemployed; *b*) one of the most important takeaways from the ETUC[2] September 2018, poll is that European trade unions and workers' representation organisations are not opposed to digitalization. Participants' comments reveal that trade unions and workers' representatives are well aware of the opportunities afforded by new technologies and new digital business models in terms of business and employment from north to south and east to west; *c*) endorsing a broad, holistic economic perspective – the stakeholders' approach – that sees each economic operation as intertwined with its surroundings: investors, managers, workers, consumers, the local community, public health, the environment, and more. This perspective differs from the dominant shareholders' approach, which views shareholder revenue as the corporation's ultimate purpose (Crouch 2019; Harvey 2007); *d*) instead of viewing workers as liabilities and seeking to reduce labour expenses by every means necessary, unions should emphasise the human contribution to the economy. Humans will continue to play important roles in the new economy, such as coming up with new ideas that AI can't yet implement and dealing with the moral aspects of material existence (see Collins 2018); *e*) act as lobbyists and advocate for Universal Basic Income (UBI) (Simms 2019; Standing 2017) or other measures that would meet the citizens' basic requirements. As previously said, there are various barriers that must be solved before UBI may be implemented. The question of how to fund UBI once most people no longer work and hence pay no income tax is a major roadblock; *f*) researchers from the International Monetary Fund recently

suggested that taxing capital to pay employees' UBI would be extremely difficult since it would have a detrimental impact on firms' strong returns on automation technology (Sorgner 2017).

As a result, at the outset of the AI and automation revolution, unions have a new mission. Instead of putting out fires, they should take a proactive, strategic approach (Hyman 2007). In view of the development of robotics and AI all over the world, consideration should be given and initiatives taken to amend existing relevant international agreements when needed or to draft new instruments with the objective of introducing specific references to robotics and AI. International cooperation in this field is very much desirable. To develop each of the processes indicated herein, to examine future scenarios in specific sectors of the economy, and to analyse how these scenarios might affect employees and their representative unions, more research is required.

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NOTES

[1] https://www.etuc.org/en/document/etuc-resolution-digitalisation-towards-fair -digital-work.
[2] ETUC: The European Trade Union Confederation is the major trade union organisation representing workers at the European level.

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