**The Future of Labor Unions in the Age of Automation and at the Dawn of AI**

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**Abstract**

**Introduction**

The world is currently traversing a global health crisis that has forced governments everywhere to take unprecedented actions in an attempt to stop the spread of the SARS-CoV-2 virus. These actions have included closing borders to ground and air travel, closing schools and universities, shopping malls, production and manufacturing facilities, and requiring people to practice social distancing, including quarantine and shelter-in-place practices. Companies in numerous countries have been required to change their work procedures to safeguard the health of their employees, which has often led to remote work and work from home. Although many hi-tech companies had previously allowed employees to work from home occasionally, it was extremely rare to find companies to operate fully and continuously in this mode.

Companies are not the only ones modifying how they operate; educational institutions have also closed their gates and shifted to remote learning. The entire global health sector is also changing as doctors and nurses are forced to protect themselves and to provide healthcare remotely to quarantined and infected people. This abrupt change has demanded organizations to adapt and create ways for their employees and students to continue to work and learn. The current coronavirus crisis has significantly accelerated the adoption of digital technologies to allow “remote life” en masse (i.e., working, learning, and interacting) so that people can continue to work, meet, communicate, collaborate, learn, and access information. Organizations are experiencing an extremely rapid digital transformation through the adoption and implementation of advanced technologies. The accelerated pace of implementing digital technologies and allowing different modes of work has also advanced the “future of work” more rapidly than anticipated, and these changes have attracted the attention of many scholars, analysts, and influencers. In this context, we focus herein on how labor unions are being affected by this accelerated transition in the workplace.

Extensive scholarly writing in fields of labor studies, sociology, and labor law has focused on platform capitalism and how it is intertwined with the gig economy. The gig economy is expected to be the next evolution in the labor market and to be a transitional phase, or a type of “grace period,” from the current economy to a fully digitalized economy. However, the Covid-19 pandemic and the accompanying social distancing requirements are heavily affecting the gig economy [1], which is based on the interpersonal interactions mediated by a digital platform. For example, ride-sharing platforms such as Uber and Lyft are experiencing a drastic decrease in use [2]. In some countries, ride-sharing platforms have ceased operations altogether to help stop the spread of the virus [3] and, in other places, governments have banned ride sharing [4]. The Covid-19 crisis has highlighted the risks and insecurities for those who work via gig platforms and rely on them as their main source of income [5, 6]. However, some gig economy platforms are experiencing a significant increase in the demand for work and employees. For example, the social distancing measures and the mass closure of businesses have forced people to use delivery services on a massive scale [7].

It would appear, then, that the prospects of the gig economy are more limited than what was heretofore assumed. But the Covid-19 crisis has an additional and much more dramatic effect in the form of massive job loss, layoffs, and unpaid leaves for millions of people around the world [8]. Retail, hotels and hospitality, airlines, travel and tourism, sporting events, restaurants, theaters, and concerts are all sectors that have been heavily affected [9, 10]. Estimates predict that the U.S. will experience the greatest job loss in their history, even more than during the 2008 financial crisis [11]. These massive layoffs exert enormous stress on governments, which is especially apparent in the unemployment and welfare agencies that must handle unprecedented numbers of requests in a very short time [12]. Given the need to maintain strict social distancing, governments are also quickly adopting and implementing digital tools and solutions to be able to continue to function and support their citizens in this time of crisis.

Major crises have long been powerful forces for change and have accelerated innovation and the creation and adoption of new technologies and ways to work. Following the 2008 financial crisis, the professional world experienced the resurgence of the gig economy driven globally by digital platforms such as Airbnb and Uber. The Coronavirus crisis may also be the harbinger of fast-paced changes that will affect all aspects of our lives, and that will be driven by digital technologies. The current mode of “remote living,” as we call it, may become the new norm for numerous organizations worldwide, even after the crisis has finished. Given that changes are usually unidirectional, this change could well become permanent and would affect how labor unions operate, as the “collaborative” aspect of unions is managed remotely.

The combination of massive layoffs, the inability of workers to access their workplaces, and the augmentation and replacement of human labor by digital technologies imply that the current changes in the labor market may not be temporary but rather a prologue of a deeper transformation that might force masses of people to take up nonstandard jobs or face unemployment. The digital age has arrived faster than expected and is only accelerating, and the result will be the mass replacement of human labor by automated labor.

Traditionally, trade unions have been the main institutions that represent workers. How can unions stay relevant in this new context? What can they contribute in this new era, which may be characterized by a continuous reduction of their membership? These are the main questions addressed herein.

**Background**

Digital technology is already transforming society and, ultimately, production, services, and the creation of wealth may no longer rely on human labor. Consequently, trade unions, whose power depends on the membership of masses of paid workers, will lose much of their power. Thus, trade unions will have to reinvent themselves, which means redefining their vision, goals, strategies, organizational culture, and, potentially, their constituencies. Furthermore, this challenge to unions does not lie solely in the far future, but its immediate manifestation calls for timely measures from unions. The goal of the present paper is to discuss the next two significant challenges to confront unions in capitalist democracies: first, their role in the transition from an economy based on paid labor to an economy based on automated production and, second, their new vision of how to present themselves as the jobless economy becomes a reality.

The labor market scenario we present here is the most radical and remains under debate. However, we believe that unions must be prepared for it. Scholars do not necessarily agree about the extent of the future transformation of work, but a broad consensus exists that the change will be transformative [13].[[1]](#footnote-2) Thus, unions should consider designing new strategies to deal with this future.

**What differs now? The risk of automation with artificial intelligence**

Any discussion about the implications of automation and artificial intelligence (AI) for production and service processes must begin with a broader discussion about technological innovations, economic progress, and their social implications.

In 1930, the notable economist John Maynard Keynes wrote about the economic and social condition a century ahead of his time, and the road to get there. Keynes started with the contention that the rapid economic changes since the eighteenth century—and the social changes they had engendered as well as the social problems they had inflicted—had led to pessimist views about the future. These views were upheld by two groups: the revolutionaries who saw no alternative but violent change to improve society, and the reactionaries who wished to halt progress by avoiding any active measures to improve the economy. Unlike these voices, Keynes offered an opposite view. In the midst of the great economic depression, he envisioned an optimistic yet realistic future. He saw the economic and social problems of his times not as pathologies but as “growing pains of over-rapid changes” [14, p. 358]. Keynes stated that the combination of capital accumulation and major technical improvements would enable industry to produce more than what the growing population could consume. He predicted that advanced technology would make part of the human workforce redundant. Keynes further assumed that the new society, being free of material shortage, would introduce a new system of resource allocation and a new moral system. Financial wealth would cease to be a goal in itself; people would work fewer hours and would do so for the sake of their mental well-being, not for their material security.

The next wave of public debate on this topic arose in the 1960s. Again, growing automation led to optimistic views of new possibilities that freed workers from routine jobs, but anxiety also grew regarding worker health, technological unemployment, and other issues. One possible solution was automation funds, which were to be jointly administered by unions and employers to support workers during this transition [15]. David Ben Gurion, the founding father of the modern state of Israel, wrote the following in December 1969 (translated from the Hebrew): “… advanced technologies … will enable only one worker that is using cutting-edge technological tools to perform the work that now requires ten workers or more. And in my opinion, it demands a complete revolution in all occupations, and it depends on the government” [16].

Following the literature and data that we introduce, we claim that the dramatic technological advancement of the present times will necessarily lead to an all-encompassing change. In addition, we discuss the dualist stance that progress entails strains. As a society, we should learn to discern between strains necessary for growth and those that are symptoms of broader acute problems. Both cases require intervention. Strains necessary for growth should be dealt with by measures that ease the transition and mitigate the accompanying pains. Acute problems need long-term treatment and deeper supportive measures. Below, we elaborate on these two types of measures.

As suggested by this brief review, the discussion of technological change and its implications for the labor force comes in waves. We argue herein that society is currently in the midst of the onset of a massive wave of technological change and should prepare itself. Although a number of recent papers contest the scenario of job displacement by automation (Bessen, 2017; Autor & Salomons, 2018), we should be skeptical about these studies because their data were acquired prior to 2007, an era in which AI technology was not available for industrial use and robots were much simpler than today [17]. Today’s economy is experiencing what is known as the fourth industrial revolution, which began in 2013. This revolution is characterized by the use of advanced technologies involving AI, robotics, and the internet of things to automate tasks and jobs. The current wave of technological innovation is expected to be revolutionary as it makes machines more automated, autonomous, and self-learning. Contrary to previous waves of technological innovation where technology was envisioned to augment people, this time, the aim of technology is to replace people [18]. Currently, AI and robotics compliment highly skilled workers in nonroutine tasks and do not replace these workers. Nevertheless, these technologies already bring new skills—that humans may not have—to improve our productivity, efficiency, and flexibility [18, 19]. The conclusion is that we are facing much more than the challenge of retraining the workforce to adapt to new production processes: “this time new emerging jobs might not be able to compensate jobs endangered by the new technology” [20].

Understanding the scope of the new revolution requires an in-depth account of automation. A common approach to this issue is first to understand the types of tasks people do for each job and to divide them into a sequence of actions, and second to estimate the level of automation that could be applied to each action [18]. Usually, a person’s job combines different types of tasks, so, as Gibbs [21] stated, “the effect of technology on job design rests on a substitute-complement continuum.” Therefore, the concept of automation may be applied to an entire job or only to specific tasks within that job, whether at home or at work [20, 22]. Augmentation occurs when automation works side-by-side to complement humans in their work. Replacement occurs when automation technology replaces humans who perform specific tasks or jobs [23].

The current development of automation is revolutionary due to its potential extraordinary scope. Automation now encompasses not only routine tasks (physical and cognitive) but also nonroutine tasks. Whereas previous waves of technological innovations and advancements mainly augmented and assisted human workers, automation today increasingly means the replacement of humans in activities and tasks so as to accomplish these activities and tasks with minimal human intervention or supervision [22]. Tasks include both routine and nonroutine activities[[2]](#footnote-3) (see Figure 1). Routine tasks (physical or cognitive) are more easily automated and therefore have been those in which human labor has been replaced; nonroutine tasks (social and abstract), which have up to now been perceived as harder to automate, have started recently to have human labor replaced, as AI technology advances rapidly [24, 21, 25]. Therefore, an unprecedented number of jobs are under threat by substitution, including many skilled and non-manual jobs that were considered heretofore to be immune [26].

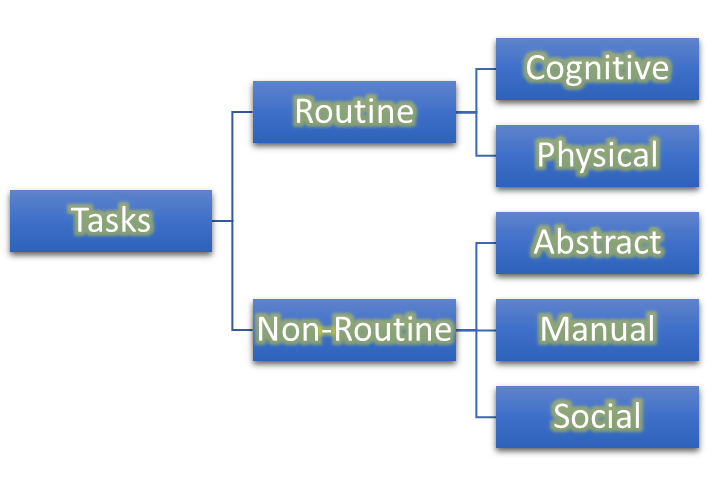


Figure 1 - Types of tasks in a job.

The major driver of automation is the rise of new computer hardware that allows the treatment of enormous amounts of data, which opens the gates to AI and machine learning algorithms [20]. Today, AI-enabled robotics hardware allows robots to have more delicate interactions with humans and to be much safer when operating side-by-side with humans [18]. Service (social) robots, for example, such as personal-care robots, operate side-by-side with humans. Hospitals around the world have started deploying and using robots to provide remote care and treatment to coronavirus patients, which enables continuity of care while protecting the medical and public health staff [27]. Robots of this type have a real chance of further evolving into more autonomous machines that will gradually replace human labor. Or, in the words of Autor and Salomon [28], the new automation technologies are “labor displacing” because they “reduce labor’s share of aggregate output.”

To summarize, this overview of current developments and of the future potential of new technologies leads us to propose two future scenarios: The first is “the collapse of the ‘full employment’ norm to which all developed economies have become accustomed” [26, p. 12]. The second is that “we are likely to face substantial turbulence as careers and industries are disrupted all across the economy before the hoped-for ‘new jobs’ emerge in sufficient numbers” [26, p. 11].

**Review of job-automation predictions**

How can we predict the probability of human replacement by automation? In 2013, Frey and Osborne published the first comprehensive report on the potential and probability of the automation of more than 700 different jobs [13]. Brandes and Wattenhofer [20] extended the work published by Frey and Osborne [13] by analyzing the tasks that comprise each job and calculating the probability of automation of each.[[3]](#footnote-4) By using O\*Net historical data for the period 2001–2015, researchers showed that jobs with a high probability of automation already started showing a decrease in demand for employment during this time [20, 29]. This was also validated on a national level, albeit with local variabilities [30, 31].

While these two reports provide a high-level overview of the potential of automation, other studies have focused on specific domains and industries. For example, occupations that require enormous amounts of information to perform (i.e., knowledge workers) have a high potential for improved efficiency by using AI, which would allow the automation of major routine processes [32]. In the medical and clinical domains, for instance, AI and robotics may automate the diagnosis, screening, and even counseling procedures. In the medical imaging domain, numerous tasks and tests could be automated by using AI for image recognition (e.g., for pathological tests) [32]. As the Covid-19 pandemic spreads, AI technologies have been used to assist and augment the work of public health professionals and medical doctors for screening and diagnosis [33, 34, 35].

Automation and AI will also transform other fields, one of which is the function of governance in organizations, particularly human resources (HR), where AI and robotics may make the regular management supervision and guidance of humans redundant, and eliminating the need for the traditional recruiting functions of HR [36]. Another domain is the banking industry that could leverage AI and robotics in various occupations and roles, starting from the contact-center to front-desk tellers [37].

The automation and AI revolution will encompass not only high-skill economic branches but also mass-production industries. For example, Acemoglu and Restrepo [38] showed that replacement by industrial robots is more likely when the workforce is older (36–55), and in countries that are experiencing a demographic shift. Recently, the oil and gas industry have started adopting advanced automation technologies that reduce the need for human labor on ocean rigs [39].

It appears, then, that automation and AI are certain to have a large impact of vast scope. They will probably deeply penetrate domains that were heretofore considered immune and will challenge the employment prospects of entire populations.

Ifor.

**The (ir)relevance of education and training for automation**

The common belief is that education, training, and upskilling is a panacea against the threat of job loss caused by technological advancements. The assumption is that a higher level of education and training correlates with a lower probability of long-term unemployment. According to this view, unskilled workers in industrial factories are at a higher risk of automation because the routine tasks they perform are the easiest to program and automate by software or robotics [18]. Jobs requiring high-level skills are more complex to automate than jobs requiring middle-level skills [21]. Therefore, those likely to be replaced are those whose jobs require middle-level skills (such as knowledge workers and service sector workers) [40]. Other research showed that a direct correlation exists between the skill level and type of education required for a job and the probability of its automation. For example, jobs that require pre-training (e.g., an apprenticeship) have a lower probability of automation than jobs that require on-the-job training [20]. Note that pre-training and apprenticeship are employer-led, but we should also refer to what people (i.e., employees) do when required to retrain themselves. Sorgner [24] showed that people who work in higher-risk jobs, or even lower-risk jobs are more likely to acquire new skills and training than those working in medium-risk jobs. The former group takes these steps as a self-preservation action to reduce the likelihood of their being replaced by automation. Furthermore, those who work at low-risk jobs are more likely to try self-employment and the entrepreneurial model because they also possess the soft skills that are harder to automate and more important for innovation (e.g., creativity, abstract thinking, etc.; see Figure 2).

Sorgner [24] concludes that we still do not know what type of education or training would be best to reduce the risk of replacement by automation.[[4]](#footnote-5) However, we can still conclude that jobs with the lowest risk of automation are those that require skills such as “deductive reasoning, originality, communication, training, problem-solving, and reading and writing” [21].

**Motivation for employers to replace employees with automation**

The automation of production and service processes may prevail because employers have an incentive to do so. Dirican [37] argues that “companies could achieve more profitability and sustainability only by following two options: minimizing costs or maximizing value.” The employers’ ultimate objective is to reduce the cost of each task while increasing output [28]. As automation and AI becomes prevalent, this “either-or” dilemma may disappear because AI and robotics are expected to provide both cost reduction and increased output in parallel. For instance, the financial crisis of 2008 accelerated the adoption of new technologies because organizations were obliged to optimize and re-engineer their business processes to take part in the new digital transformation [37]. The outcome was demonstrated by Gutelius and Theodore [41], who also found that the growth of the US economy after the Great Recession of the last decade skipped over the labor market.

Companies have three main incentives to minimize costs: The first is to reduce not only the demand for employees who do routine jobs but also the number of highly skilled employees who receive high wages [36]. The second incentive is indirect and is the prospect of reducing costs involved with the employment cycle, such as searching for and recruiting new employees, or the shadow costs that stem from the fact that labor costs are much greater than the actual salary paid to employees [36, 18, 21]. The third incentive is to reduce costs due to the “malfunctions” and limitations of their human workers. Although machines may break down and incur a high cost of maintenance, they never go on strike nor require any managerial attention like human employees do [36, 21]. Furthermore, industrial robots are designed for reliability and durability so that they can work continuously 24 hours per day, 7 days per week [19].

Thus, automation reduces differences in task execution that occurs with human workers, thereby removing almost all uncertainty and improving the final product [21]. Qureshi and Syed [42] confirmed and elaborated on this claim by showing that the use of robots can save employers up to 65% in labor costs while keeping their businesses working continuously without the need to manage human shifts. They added that robotics plays a major and growing role in the service sector in fields such as health, where employees who work in unhealthy environments may be replaced by robots who can perform the same tasks without incurring the health risks. This same claim was also made by Decker, Fischer, & Ott [18], who showed how the use of robots could increase efficiency and how service robots may augment numerous tasks.

We thus conclude that employers are highly motivated by multiple streams of logic to replace human labor by robotic labor and AI.

**Social implications of automation**

The automation of jobs has various effects on individuals as well as on the entire society. Sorgner [24] claims that mobility due to automation would be mainly downward, meaning that people would either be demoted in their current workplace or moved to lower-level jobs in a different industry (Figure 2). Furthermore, displaced workers may find that retraining, re-skilling, and educating themselves to enter new industries require time and money, which might prove too costly for them [36]. The risk of job loss is also associated with increased physical and mental health issues [43], as well as degraded family relationships and even family breakups [44, 45]. People who lose their job due to technological advancement might also experience difficulties in maintaining their social status and their self-value as their assets and finances decline [36].

The hope that these people will find alternative livelihoods is discounted by Sorgner [24], who finds a significant rise in self-employment that may be the result of people replaced by automation starting new enterprises. However, these businesses are not growth-focused and bring little value in terms of employment, innovation, or market value [24].

The effects of automation and AI differ for different demographical groups. Generally, technological innovation contributes to an increase in inequality because it usually displaces the less-skilled workers and decreases the demand for their services [36, 23, 25]. One outcome of the rising unemployment rates among the middle and the lower classes is growing social and political unrest, which has already manifested itself in the 2016 elections in the U.S. and in Brexit in the United Kingdom [46, p. 205].

A group of researchers from the International Monetary Fund recently stated that the “arguments for technological optimism don’t work,” meaning that the current wave of automation technologies will destroy more jobs than it will create [25]. This threat is already felt throughout the world: it raises fear, suspicion, and frustration as the risk of workers losing their jobs to automation increases [47]. The fear is understandable because we expect very high rates of structural unemployment, which differs significantly from the familiar short-term frictional or cyclical unemployment [48, pp. 4-8].

Structural unemployment is a serious threat because work has been a key institution of modern society from the outset. It not only provides for material subsistence but also defines the modern human psyche [49, pp. 677-680]. According to the deprivation theory, employment is not only essential as a source of income and subsistence but also for its psychological and social functions, such as a sense of purpose, identity, and social status and for maintaining social relationships [50, 51, 52]. Jahoda [52] articulated the five functions jobs serve for our social existence: “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 links individuals to goals and purposes that transcend their own; fourth, employment defines aspects of personal status and identity; and finally, employment enforces activity” [52, p. 188].

Massive structural unemployment in contemporary society risks undermining the social order. Coping with such a condition is a major challenge because “many predict a significant increase in structural unemployment as a result of the microprocessor technology and other innovations. Even if one rejects the fantasies of optimists […] and rejects the pessimists’ prophecies of total collapse, there are serious problems ahead relating to work and unemployment” [52, p. 190].

As discussed above, AI and robotics may have a major impact on the future of work and the well-being of future generations. Therefore, governments, enterprises, and individuals should try to tackle this symbiosis already today [23]. Nevertheless, even if the future employment situation is less severe than predicted, unions should prepare to face a massive transformation.

**Obstacles on the road to universal basic income**

As we have shown, automation and AI are expected to significantly increase productivity and push many people out of the workforce, making them unable to support themselves.

Currently, the most debated solution for deep and structural unemployment is Universal Basic Income (UBI) [46, pp. 205-208, 53], which aims to guarantee the material subsistence of the entire population via government support. These changes may entail an additional financial burden on high-income earners, capital owners, investors, and corporations. To date, UBI has been tried in countries such as Finland. However, the turmoil brought by the Covid-19 virus has promoted UBI to a realistic option. For example, the Spanish government is considering enacting UBI not only during the Covid-19 crisis but also after the crisis [54, 55].

UBI is currently in its initial phases, and its implementation remains uncertain because its financing model and many other details are not clear. For corporations, investors, and employers, it may be financially demanding. Nevertheless, due to the current tendency of these groups to maximize financial profits [56, 57], they might be reluctant to carry the extra burden. Evidence of this is provided by Kristal [58], who showed that, over the last three decades, the lion’s share of income growth due to digital technology went to capital owners (as opposed to workers). Thus, it remains possible that investors and employers will use their power to thwart any efforts to establish an adequate UBI.

Another impediment to the implementation of UBI is the decline of the state. In the current era of globalization, the state “survives by […] adjusting domestic policies to the imperatives of global competitive pressures” [59, p. 316]. Thus, the state has lost much of its economic sovereignty and has trouble “controlling monetary policy, deciding its budget, organizing production and trade, collecting its corporate taxes, and fulfilling its commitments to provide social benefits” [59]. In this context, states may be expected to experience difficulties in promoting UBI and safeguarding the economic and social security of their citizens. Therefore, the state needs assistance in fulfilling its commitment to workers’ rights, and particularly to the rights of former workers in case of mass structural unemployment.

**Are trade unions an answer?**

Up to this point, labor unions have been considered as the main guardians of workers’ rights. Therefore, one may reasonably expect the scholarly literature to discuss the role of unions in the face of the coming revolution, particularly given the threat of mass unemployment. Unfortunately, this discussion is completely absent. In over forty scientific articles dealing with automation and how it affects jobs, we found no mention of the role of unions in dealing with massive structural employment. The approach of unions to the effects of automation and AI is only as another case of a harsh frictional unemployment. Furthermore, although the literature on labor studies discusses how technology affects the transition from the standard employment arrangement to a nonstandard, precarious arrangement [57, 60], it hardly mentions the likelihood of a productive economy using a much smaller workforce.

The modern institutionalized union consolidated in the last quarter of the nineteenth century [61]. A new class of unskilled workers emerged with the first industrial revolution. Its members had leveraged unionization to increase their power for negotiating with the employers [62, p. 75]: “The chief goal of the union movement is to organize workers for concerted action in support of their interests to redress the power imbalance between those who provide labor and those who control the conditions of its use through their ownership or management of productive resources. Because workers and owners of capital do not share interests, this relationship is necessarily adversarial.” This quote reveals three basic assumptions: (i) workers ought to organize to obtain a better bargaining position *vis-à-vis* the employer, (ii) the unions’ role is reactive, and (iii) workers cannot count solely on the employers to represent their interests but need to do so independently themselves.

Over time, some unions have expanded their role beyond just representing groups of workers to defend social issues by adding their voice to those of the state and the market, thereby broadening public debate and contributing to the democratization of work and to allocative justice [63, pp. 35-57, 64, p. 646]. Unions have also expanded their engagements to include social services such as pensions [65] and health care. Their activity affects not only their own membership but also workers as a whole, as demonstrated by their contribution to the institutionalization of minimum wage [66, pp. 289-291].

Thus, by responding to the deep economic changes and offering an answer for masses of workers, unions have become relevant as a social force. Their strength grew as they kept pace with economical and institutional developments and provided solutions for their constituencies. They were especially successful from the 1930s to the 1970s, when they were part of the bargaining mechanism together with employers’ associations, backed by the state. Unions were part of “managed” or “organized” capitalism [67].

As they lost responsiveness, unions lost their relevance. Since the 1970s, they have failed to adjust to rapid developments such as globalization, the introduction of advanced technologies, the transformation of the labor market [63, pp. 81-93], and flexible employment arrangements (Ibsen & Tapia, 2017, pp. 175–177; Luce, 2014, pp. 8–9; Nissim & De Vries, 2014) Bronfenbrenner *et al.*, 1998, pp. 3–6). The reasons for unions’ downfall are not only external but also internal, including ,, and the exclusion of workers due to gender [68], race, nationality, ideology, and other biased criteria.

Unions became aware of the crisis and have been engaging in “revitalization” and “renewal” strategies since the 1990s.[[5]](#footnote-6) These strategies included measures such as recruiting new members,[[6]](#footnote-7) organizing workplaces, internal restructuring, building coalitions with other social movements, partnering with employers (Bennett, 2013; Mcllroy, 2008), and partaking in political action aiming to influence the higher power centers (e.g., political parties, legislation, state institutions) [70, p. 9].[[7]](#footnote-8)

Nevertheless, given the new world that unions face today, such revitalization and renewal strategies are not enough. The new context faced by unions is manifold: the rise of the gig economy and digital platforms, automation, and AI. Thus far, unions have been responding only to the first trend. Numerous ambitious suggestions have been raised, including cultivating common class consciousness among digital workers, establishing a transnational digital workers’ trade union, and using the workers’ presence on the internet to protest against the digital platforms or even disrupt their operation [71, pp. 155-156]. Measures have already been put in place, including opening trade unions to self-employed workers (a definition that fits the legal status of those employed by platforms), establishing a union of self-employed workers,[[8]](#footnote-9) legal support for nonorganized workers, agenda-setting activities endorsing workers’ rights, and lobbying for standard and fair employment terms [72].

However, the measures mentioned above have proven insufficient to cope with the revolution of automation and the possibility of mass unemployment. These measures become even more insufficient given the grave risk that automation and AI pose to the traditional sources of union power, especially the associational power, which arises from workers organizing together for collective action, and organo-structural power, which is based on the position of employees within the economic system (rare skills, their location in strategic production or distribution sites, etc.) [63, pp. 124-125, 73].

**Unions in the transition to a jobless economy**

More than ever before, unions need to strengthen their “strategic capacity” and reinvent themselves as learning organizations if they want to remain relevant [74]. Real learning is the ability to destroy limiting patterns [75], so we suggest that unions should adopt a new paradigm and expand their calling beyond representing workers to representing the economic and social rights of all citizens. However, this shift can only materialize gradually.

We discuss two stages: the near future and the distant future. The first involves the transition period from the current reality to a future automated, digital economy, whereas the second refers to an era in which the economy is widely based on automation and AI. We also suggest that union leaders adopt the most radical future scenario as their point of departure, which will force them to reevaluate their underlying assumptions about who they represent and what are their goals and strategies.

In the short term, we recommend that unions adopt the following seven measures:

1. **Developing research**: This involves establishing or expanding specialized research units to study the accelerating changes in the economy and the course the economy is taking. In unions that already have research departments, we recommend that they adopt methodologies such as futurism and long-term planning, which are used today by numerous corporations around the world.
2. **Onboard technology experts**: To develop a deeper and broader understanding of the possibilities offered by new technologies, unions should recruit technology experts to their management teams and not be satisfied with general future scenarios. Recently, this gap in digital and technological knowledge in corporate boards was shown to diminish the success of the digital strategy of companies [76].
3. **Support an augmented workforce**: Unions should empower workers where automation does not completely replace human labor. Unions should actively map industries and jobs that are likely to remain dominated by human labor, organize their workers (where they are currently not organized), strengthen worker status, and improve working conditions.
4. **Advocate for employee health, safety, and privacy in the age of AI**: Unions should represent workers’ rights regarding health, safety, and ethics at workplaces that are undergoing automation. Workers that use cutting-edge technologies in the workplace are expected to lose some, if not all, of their privacy during work because they will be tracked and monitored by numerous sensors that collect data to improve and further optimize their work [21]. These complicated issues will be affected by the digital revolution, and workers cannot rely on employers or state regulations to safeguard their rights.
5. **Join AI consortiums**: To be connected to the main players in the AI field and remain up to date about developments as they occur and influence such developments, unions should join AI consortiums all over the world.
6. **Managing dignified retirement**: Unions must bargain for fair retirement conditions for employees in workplaces where human labor is certain to be replaced. In such cases, unions should channel their bargaining efforts away from hopeless struggles against dismissals to securing the best retirement compensations for workers and for their retraining to help them explore other career paths. This is called outskilling and is a new method that companies worldwide have recently started to offer to employees that “don’t have a future at [the] company” [77].
7. **Facilitate re-skilling and upskilling**: This involves cooperating with employers and governments to build upskilling and re-skilling programs for workers whose jobs are at risk of automation. The goal is to facilitate their re-assignment into industries and jobs with a lower risk of automation or to promote their conversion to other positions with the same employer.

**The distant future**

In the more distant future, when a jobless society may become a reality, unions can sustain their relevance only by adopting a new vision. They should transform their primary calling from representing employees to representing the social rights of all citizens.

Thomas Marshall maintained that modern citizenship is based on three layers of rights: The first is civil rights, which are mainly legal and secure the freedom of individuals—the freedom of speech, religion, the right to own private property, and more. Political rights are next, which guarantees the ability to elect and be elected to sovereign institutions where major decisions are taken. Finally, social rights form the most advanced layer. These endow citizens with material security. Everyone is entitled to have access to appropriate nutrition, health care, education, transportation, etc. (Marshall, 1950). Historically, political and social rights, among others, have been achieved because of pressure applied by worker groups, consisting mainly of organized workers. In Scandinavian countries, for example, not only have trade unions played an active role entrenching these rights, but they have also provided welfare services such as pensions and unemployment insurance [78, 79]. The end of mass employment may jeopardize these rights.

A jobless society might strip the working class of its structural power and turn former-workers into liabilities in the eyes of employers and into welfare costs in the eyes of governments. Governments are already pressured by corporations to cut their taxes, and the outcome might further reduce welfare budgets and widen the already huge inequality between the social classes (Morgan, 2014). In this context, the role of trade unions as the representatives of the material interests of lay people is crucial. They can organize and mobilize people to support essential solutions to the problem of material security for citizens. Without this, and with no other institutional protection, many jobless citizens will be exposed to the dangers of poverty. In this context, labor unions should consider shifting their main efforts from representing employees to representing broad social movements that champion the following agenda:

* Open the union gates not only to employees and the self-employed but also to those who are left out of the labor market.
* Function as a lobbyist and lead the way for UBI or for other means that could secure the material needs of the citizenry. One possibility for trade unions is to lobby for UBI [60, pp. 35-37, 53]. As elaborated above, UBI must still overcome numerous obstacles before it can have any hope of implementation. A prime impediment is the question of financing UBI when most people no longer work and thus would pay no income tax. Recently, researchers from the International Monetary Fund stated that taxing capital to pay UBI for workers would be extremely challenging because it would negatively affect the high returns of corporations on automation technologies [25].
* In addition to endorsing UBI, unions should consider amplifying other activities of universal benefit, some of which they have already engaged in, such as minimum wage, pensions, and public health. This need for benefits to be spread equitably throughout the entire society is also apparent in the current Covid-19 crisis, as demonstrated by the call of the ITUC (International Trade Union Confederation) and the OECD TUAC (Trade Unions Advisory Committee) for the G20 countries to support all workers regardless of their employment status, including those in the informal economy, in the following issues: “paid sick leave from day one; wage/income protection; managed reduction of hours where necessary, government support to maximize income security; mortgage, rent and loan relief; universal social protection and free access to healthcare; and childcare support for frontline workers in health, supermarkets, pharmacies and other vital areas” [80]. The return to activities pertaining to public policy and social rights may create an incentive for lay citizens to join unions, even if they are unemployed, self-employed, or temporarily employed.
* Endorsing a wide, holistic, economic perspective—the stakeholders’ approach—that sees economic enterprise as embedded in the surrounding environment: investors, managers, workers, consumers, local community, public health, the environment, and more. This approach is an alternative to the dominant shareholders’ approach, which sees shareholder revenue as the ultimate goal of the corporation [81, 56].
* Unions should pinpoint the human contribution to the economy (as opposed to the view of workers as liabilities and the concomitant motivation to cut labor costs by any means possible). In the new economy, humans will maintain crucial roles—creating new ideas that AI could still not implement and addressing the moral aspects of material life [82, pp. 1-10].
* The case for a human-centric economic approach could also translate into the re-ignition of the possible role of unions as entrepreneurs. Unions may initiate new forms of ventures that fit into the new economy and enhance it. This trend worked well in the early days of the Israeli Histadrut [83] and in the Ghent System in which unions operated the system of unemployment insurance [79]. This can also be traced to other movements (e.g., the Austrian Marxism or British Fabian movements), which were more reformist than radical and strove to build economic institutions embedded with human and social aspects [84, 85].

Thus, at the dawn of the automation and AI revolution, unions have a new calling. They should stop playing the role of firefighters and, instead, embrace a proactive, strategic approach [74, pp. 194-195]. Further research is needed to develop each of the steps outlined herein, to analyze future scenarios in specific economic branches, and to analyze how these scenarios might affect employees and representative unions.

1. The debate on technological advancement and the future role of human labor is old. However, given the new developments in the field of AI and automation, we do not refer herein to literature about these technologies published prior to 2013, which is when the current debate about these issues was launched by Frey and Osborne [13]. [↑](#footnote-ref-2)
2. In this article we prefer discussing on a task level, addressing whether it is routine or nonroutine, rather than on a profession level as done by Eden and Gaggel [86, p. 8]. No profession is purely nonroutine or routine, so the discussion should be on the task level of professions. [↑](#footnote-ref-3)
3. They did it by calculating the percentage of work each task does for a job (task share). They also used other properties (metadata) of specific jobs to calculate their probability to be automated. [↑](#footnote-ref-4)
4. Sorgner's contention about the uncertain prospects of education is also supported by the research of Berg, Buffie, and Zanna [25]. [↑](#footnote-ref-5)
5. “Revitalization” aims to organize previously ignored populations of workers and rebuild grass-roots social movements. “Renewal” refers to the ways in which unions creatively rely on their existing capacities and familiar channels to strengthen their workers' position in the new context of a globalized and more competitive economy [94, p. 443]. [↑](#footnote-ref-6)
6. “The American labor movement is at a watershed. For the first time since the early years of industrial unionism sixty years ago, there is near-universal agreement among union leaders that that the future of the movement depends on massive new organizing” [92, p. 1]. [↑](#footnote-ref-7)
7. An example of how unions have used their capacities to improve worker conditions is illustrated by Klindt [94]. Danish unions used their long-lasting partnership with employers and their role in the local governance networks to improve their workers employability in the context of an unstable global economy and a liberalization policy. [↑](#footnote-ref-8)
8. This occurred in France. [↑](#footnote-ref-9)