

Back to the future: A continuity of dialogue on work and technology at the ILO

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Abstract. *Concerns about technological unemployment are not new. Specifically, policy debates surrounding automation processes in the 1960s reflected both optimism and concerns about the job-destroying potential of technology. Studying the archives, and in particular the information collected by the Bureau of Automation, shows that many of today's policy proposals were originally raised at the ILO during that period, even though they were never translated into regulatory policy. This article thus suggests that reopening this past dialogue may reveal useful insights for addressing current challenges, and enable us to achieve the world of work we wish to see in the future.*

Keywords: *future of work, technological change, automation, unemployment, job insecurity, development policy, history, role of ILO.*

New technologies, such as on-demand platforms, algorithmic management, artificial intelligence (AI), 3D printing, virtual presence, people analytics and gamification are all beginning to have an impact on the world of work. Many contemporary scholars and policy-makers predict that these trends will provoke a new wave of technological unemployment, and there is an ongoing debate about how many jobs or occupations will be gained or lost (Brynjolfsson and McAfee, 2014). While many portray the concern about a jobless future as a seemingly new issue (Frey and Osborne, 2017), current discussions are fundamentally linked to a longstanding dialogue on automation and work at the ILO.

Concerns about technology and its impact on labour are not new. The policy issues around automation, technological unemployment, retraining and the appropriate legal and policy responses were raised in the 1930s, the 1960s, the 1980s and now again today. While each burst of technological development ignited intense hope, anxiety and debate, the dialogue did not result in concrete changes in regulatory policy. The celebration of the ILO's centenary provides

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an opportunity to re-examine the research on work and technology, and to re-open conversations that have been largely consigned to the past. The aim of this article is to sift through the historical archives of the ILO and other contemporary sources in order to select the ideas and policy strategies that might have the most applicability today.

In the 1960s, proponents of automation pointed to the decade's significant advancements in areas like satellite communication, space exploration and electronic data processing (Gavett, 2016). Similarly, factory automation was seen by some as a form of progress that could free workers from mundane and strenuous labour. Optimists argued that increased automation would "ensure future technological progress, increase productivity and ease the strain on workers" (Hong, 2004, p. 52). In a 1966 report, the US National Commission on Technology, Automation, and Economic Progress claimed that increased automation could lead to better overall working conditions by "eliminating many ... dirty, menial, and servile jobs" (National Commission on Technology, Automation and Economic Progress, 1966, p. xi). It could also result in shorter working hours, increased leisure and "a growing abundance of goods and a continuous flow of improved and new products" (ibid.).

Conversely, critics across academic and professional fields warned of a dystopian future with rampant unemployment and losses in human autonomy. In 1960, Norbert Wiener, who developed the idea of cybernetics, warned of the dangers of learning machines achieving "a certain degree of thinking" that could transcend human intelligence. His warning included a doomsday prediction that hypothetical learning machines could be programmed into a "push-button" nuclear war that could destroy human civilization (Wiener, 1960). Other technological thinkers of the time argued that automation and learning machines could result in a significant loss of human autonomy. In *The technological society*, philosopher Jacques Ellul argued that "there [could] be no human autonomy in the face of technical autonomy" (Ellul, 1964, p. 138). Similarly, American sociologist Herbert Marcuse suggested that increased automation and advanced technologies could result in machine control and domination (Marcuse, 1964).

Much like in the 1960s, the current debate surrounding automation and learning technologies focuses on the tug-of-war between increased global prosperity and a potential loss of human control and autonomy. Silicon Valley leaders have expressed both optimism and concern over the future of AI and automation. For example, Google's engineering director Ray Kurzweil considers that intelligent technologies open endless possibilities for human advancement that will result in "new types of jobs creating new types of dollars that don't exist yet" (Clifford, 2018). He further argues that such advancements will create "more profound music, literature, science, [and] technology" and fundamentally improve humanity (ibid.). Others, like Tesla and SpaceX CEO Elon Musk, have warned of artificial intelligence's potential to evolve into "an immortal dictator from which we would never escape" (Holley, 2018).

This article focuses on a comparison of today's conversations about work, technology and AI with the dialogue in the 1960s about automation and concomitant policy proposals. The first section discusses the current landscape of labour, technology and regulation. The second presents the social, political and

economic dialogues surrounding technology and automation in the 1960s. Drawing upon documents from contemporary news accounts, research papers from a variety of sources, as well as the ILO archives (hereafter “ILOA”), it demonstrates that many ideas for addressing technological unemployment were advanced by unions, academics, government agencies and international organizations. Lastly, the third section discusses how re-opening the dialogue from the past may contribute useful suggestions for our current predicaments and challenges. From reduced working time to negotiating technological implementation with unions, many of the ideas about new technologies that we are discussing today were originally put forward in the 1960s. This article aims to use these historical insights to discuss the legal and regulatory changes necessary to achieve the world of work that we want to see in the future.

1. Current technologies and impact on work

Over the past decade, a variety of new technologies have begun to have an impact on how work is performed and structured. Unlike earlier forms of mechanization and automation in the 1960s – which primarily had an impact on blue-collar and factory workers – these more recent technologies also affect knowledge and service workers. Increasingly, though, it appears that these sectors are not immune to automation or other related trends such as fissuring, casualization or offshoring. The technologies that are having an impact include on-demand platforms, algorithmic management, AI, virtual presence, 3D printing, people analytics and gamification.

1.1. The development of on-demand platforms

In 2016, a survey by *Time* magazine found that over 14 million people in the United States were working in the “gig”, “on demand” or “sharing” economy (Steinmetz, 2016). Since that study, the popularity of online platforms around the world has continued to grow, making gig work a global phenomenon (Berg et al., 2018). Positive news stories focus on the opportunities generated for people who need and want more flexible days and hours than a typical 40-hour week job provides. Sharing websites and mobile apps may also provide a quick and easy way for customers to seek assistance. Negative stories, on the other hand, focus on the terms and conditions of work, including a lack of benefits and opportunity for advancement (Marvit, 2014; Kessler, 2018). These stories detail the uncertainty of on-demand platforms for workers, the low rates of pay provided on some platforms, and the amount of unpaid search time that goes into finding the next gig (Kessler, 2018).

While most people are familiar with ride-sharing apps like Uber or Lyft, there are many other types of crowdwork. Some, like the ride-sharing apps, involve the use of a digital platform, but the actual work tasks are completed in the real world. These websites facilitate different service tasks, such as GrubHub (food delivery), Instacart (grocery shopping) and Handy (home repairs). Other websites, like Amazon Mechanical Turk (AMT), crowdsource computer tasks to a global market of workers, fragmenting work into very small slices of time. On these computer sites, the requests, the hosting and the work itself are

all performed online, and are part of a global marketplace for work (De Stefano, 2016; Donovan, Bradley and Shimabukuro, 2016). Websites that are part of “prosumer” movements involve customers in design or marketing decisions, only to then sell them products (Howe, 2009).

Although their specifics and mechanics may differ, on-demand platforms share common characteristics. Through a market-making function they create an “open call” that then matches discrete tasks to on-demand workers. On-demand services seem to thrive in an environment that is increasingly globalized, anonymous and, with lowered transaction costs, more efficient. A convergence of critical thought and attention is beginning to crystallize around the gig economy, and is expressed in the popular press, in computer science technical reports and on social media accounts, in sociological and economic studies, in business schools, in law reviews and in the courts. Various accounts have emerged that document and analyse key characteristics of on-demand work, including: reliance upon, and placement within, the information society; the globalization of these platforms and workforces; dependence on trust and reputation proxies; use of “big data” and surveillance; use of just-in-time scheduling of labour relations; and the management of workers by algorithm (Cherry, 2016; Rosenblat and Stark, 2016; De Stefano, 2016).

Whereas the traditional employment relationship involved a steady 40-hour work week, hierarchical structure, advancement and benefits, the gig economy instead stresses limited commitment and extreme flexibility (Cherry, 2016). Rather than having an individually assigned employee to take on tasks as work arises, work is broken down into smaller segments and offered out via Internet or mobile phone apps on an “open call” (Howe, 2009). Workers sign in and complete tasks at their own pace and in their own time. The worker and the platform have no obligations to each other once the particular gig or task has been completed. Yet systems of surveillance are imposed on all aspects of work, and algorithmic management is used as a mechanism of control (Cherry, 2016).

Academics have argued that gig work has resulted in precarious labour systems that are largely distinct from the traditional employer–employee labour structure that was defined by structured hours, hierarchies and wage structures (De Stefano, 2016). While gig work may offer some the potential for greater autonomy and flexibility, there are significant drawbacks. First, gig economy platforms often classify workers as “independent contractors”, shifting the traditional risks and expenses of employment – such as protections against discrimination, unemployment and low wages – back onto the workers themselves. Crowdsourcing and similar types of gig work can further disadvantage platform workers because they do not receive the same training, skills acquisition, or networking opportunities as employees in more traditional labour relationships (Cherry, 2016). These disadvantages led one commentator to brand the gig economy as a “socioeconomic disaster” because of the substantial loss of workers’ economic stability and social benefits (Estlund, 2019, p. 28).

Needless to say, on-demand work presents particular challenges for a regulatory model that is based on national law and on the standard employment model. Regulators are grappling with the use of the independent contractor loophole, the deskilling and fissuring of work tasks and the casualization of work. As

cases of first impression have reached legal systems across the world, they have resulted in extensive litigation and confusion. For instance, on-demand food delivery riders are currently considered employees in Belgium, but not in Italy. Different national systems are reaching inconsistent results in determining whether gig workers are employees or independent contractors. If the goal is a truly global marketplace, regulating according to national boundaries is problematic for online crowdwork that can be completed on a computer from anywhere in the world. As a result, there have been calls for more systematic, comprehensive codes and standards reaching beyond national boundaries (Cherry, 2019).

1.2. People analytics

Recently, leading technology companies such as Google and IBM have started experimenting with “people analytics”, a new data-driven approach to human resources management that is used to capture insights about job performance. People analytics is just one example of the phenomenon of big data, in which analysis of huge sets of quantitative information is used to guide a variety of decisions. Although people analytics is a nascent field, its implementation could help employers make more informed human resources decisions. Data may help firms determine which candidates to hire, how to help workers improve job performance, and how to predict when an employee might quit or should be fired. In addition, people analytics could provide insights into more quotidian issues like employee location and more productive use of break times. The data that drives these decisions may be collected in new ways: through the use of innovative computer games, monitoring employees’ electronic communications and activities, and new devices – such as ID badges – that record workers’ whereabouts and the tone of their conversations. Data may also be collected from sources other than the employer, gathered for specific purposes (e.g. real estate records) or undefined ones (e.g. Google search history).

The core idea of people analytics is that unstructured subjective judgement is not rigorous or trustworthy as a way of assessing talent or creating human resources policies. Instead, data – large pools of objective, generally quantitative data – should form the foundation for decision-making. Technological advancements in collecting and analysing this data have unlocked the potential for its use. But additional creativity, insight and mastery are also needed to tailor and crunch the data for particular jobs and companies.

People analytics is distinctive, however, in its new methods of approaching old problems. It endeavours to reduce the role of human subjectivity in perception by collecting data through more objective means and subjecting it to examination and statistical analysis. The data at issue could be information about productivity, or readily observable information, such as when workers take breaks, or whether people still interact with each other if it means having to go up or down a flight of stairs. Some consultants, such as Ben Waber, have used sociometric badges (with the permission of workers) to detect conversations, motion or other interactions (Waber, 2013). The idea is to study this information in the aggregate, but the process of collecting the information may present consent and privacy concerns.

1.3. Gamification of work

This concept refers to the process by which a mundane task is transformed through some combination of technology or a game play mechanism to make it competitive or otherwise enjoyable (Cherry, 2012). Turning chores and work into “fun” is not a new concept; in fact, in her book, *Reality is broken*, Jane McGonigal (2011) notes that since ancient times, societies have used games to motivate, inspire and prompt productivity. Today, with the help of technology, gamification can be employed in many diverse contexts. As scholars have noted, it can be used to improve health and wellness outcomes for patients and even assist in efforts towards ecological sustainability (ibid.).

Work – traditionally presented as the opposite of fun, games or leisure – could be fundamentally transformed through gamification. Adding a gaming component could increase worker engagement in many jobs, especially if those jobs require or are comprised of tedious or repetitive tasks. As described in the psychology literature, when we play a game, we draw on what Professor Mihaly Csikszentmihalyi (1990) terms “flow”. Flow exists when the participant uses concentration, skills, learning and adaptation in performing a task or activity. Workers might find the “play” that a game provides to be a welcome break from drudgery. Yet gamification has potential drawbacks. If used in a reflexive way, games could potentially cause harm – for example, if the “losers” in an unfair game suffer adverse employment effects.

At the intersection of gamification and people analytics, computer games are being used for yet another purpose. In people analytics, games are used for their predictive power, often to quantify or measure particular skills or aptitudes, or to screen job candidates. The stream of responses provided by a job candidate in a computer game could tell an employer how that candidate would respond to challenges at work. At the same time, integrating a game into a job interview could perhaps encourage the candidate to play, have fun, relax and maybe let their guard down. The hope is that the candidate may show their “true colours” instead of the stilted and narrow personas that candidates typically show in face-to-face interviews.

1.4. Other new technologies having an impact on work

Other technologies that may likewise have an impact on the future of work include AI, automated kiosks and 3D printing. Certainly, the implementation of big data and algorithms in the workplace also implies the growth of AI and machine learning. As algorithms become more widespread, large productivity gains are possible for certain types of workers. As Autor observed, “[w]orkers in abstract task-intensive occupations therefore benefit from information technology via a virtuous combination of strong complementarities between routine and abstract tasks” (2015, p. 16). But those synergies are not typically possible for jobs that are routine and involve manual tasks; they instead seem to invite substitution of capital for labour.

Development in automation has ignited a rise in “intelligent automation”, which has capabilities far beyond the simple “fixed” or “process” automation that arose in the 1950s and 60s. Intelligent automation systems can combine

data-driven intelligence with process automation to expand the efficiency, accuracy and capability of traditional automation. Such intelligent automation is ubiquitous in businesses like Amazon's packaging "fulfilment centers", where programmed robots are able to use context to determine the best pathways and placement of products to enable the most efficient fulfilment or processing of orders (Palmer, 2019).

In the near future, advanced AI systems have the potential to achieve further capabilities that could exceed intelligent automation and even human intelligence. Artificial general intelligence (AGI) systems, though yet to be fully developed, are machines that would have the ability to "learn, perceive, understand, and function completely like a human being" (Joshi, 2019, para. 12). Such systems would make AI machines and robots as intellectually capable as humans. Even more advanced is the potential for artificial super intelligence (ASI). Described as a potential "pinnacle of AI research", ASI would not only possess the human intelligence of AGI, but would also be better and more intelligent than humans, performing tasks currently only done by them. While seemingly futuristic, some experts predict that this kind of AI could be deployed as early as 2040 (Diamandis, 2012).

Increasingly, automated machines and self-service kiosks are changing the way that service jobs are performed. Recent discussion in the United States has focused on fast-food kiosks. Grocery and many other shops now have self-checkout options, with one shop, run by Amazon, where this is the only option. Such checkouts are already commonplace in airports, train stations and in other transportation facilities. To a large extent, these types of automated checkouts involve a process of "work transfer", making the customer, passenger or end user responsible for doing the work that was once done by a full-time employee. Others may involve humans that are virtually present or have their voice or actions integrated into a technological interface, such as a holographic receptionist (Crain, Poster and Cherry, 2016).

Meanwhile, 3D printing is bringing manufacturing back into homes, basements and garages. While it is primarily used by either large companies or hobbyists, 3D printing makes it much easier to produce prototypes and parts that are small scale or unique. It thus enables a new form of home-based manufacturing, whereby an activity that once prevailed in developed countries, and continues to prevail in developing countries, is now being practised once again using different methods.

1.5. Implications of new technologies and links with the past

The concerns raised in the 1960s largely related to blue-collar workers losing factory manufacturing jobs to automation. Many wondered if machines would completely take over manufacturing, and whether workers would be bored if all they did was watch screens or check for malfunctions. These concerns did not materialize; the manufacturing jobs were largely outsourced to countries with low labour costs, with many industrialized economies instead shifting to service and knowledge work.

As creative work, office work and other types of intellectual work can now be broken down and crowdsourced through on-demand platforms, concern has

grown about the precarious nature of these jobs. While many of the predictions made in the 1960s went unrealized, regulators, academics, unions, workers and industrial managers did face similar dilemmas and predicaments when dealing with automation in their time. It is, therefore, necessary to take a more in-depth look at the technologies at issue, and the ideas, proposals and suggestions that these actors made for ameliorating unemployment or other negative consequences at that time.

2. Past dialogues and proposals on automation and work

This section discusses the social, political, and economic dialogues surrounding technology and automation in the 1960s. It primarily draws from a sample of research papers, contemporary news media and the archives of the ILO reflecting the “state of the art” in the technology and work policies of the 1960s. Many of the academic or policy papers of the time contained thoughtful diagnoses of the issues, and well-developed statements of the problems. Others were astute in cataloguing ongoing technological change, analysing it and developing policy designed to address it.

2.1. Excitement, panic or both? Reactions to automation in the 1960s

Throughout the world, concerns about increasing factory automation have resulted in activity within employer associations, unions, national governments and academia in an attempt to prepare for the future world of work. In the 1960s, increased mechanization was met with a combination of excitement and anxiety. The former came from a widespread belief in technological progress, as the space race and the power of the atom promised increasing prosperity. Many placed their hopes in the idea that automation would spur economic growth and relieve many workers from difficult, repetitive and dirty tasks. At the same time, the rapidly advancing pace of technological development was a source of great anxiety. Workers worried about technological unemployment and union advocates feared that the jobs that remained would be of high stress and high intensity, leading to concerns about worker health and stability. Meanwhile, management and employer groups worried about competitive pressures, the possibility that workers would be resistant to change, and the need for increased efficiency.

Concerns were growing in the United States in particular. In 1961, a *Time* magazine report entitled “The automation jobless” shone a spotlight on the issue of technological unemployment (*Time*, 1961). Dramatic headlines such as “Prepare now or fail: Automation warning at Tel Aviv talks” (Krivine, 1965) captured the feeling of the time, when it became apparent that disruptive technology was being implemented in factories and offices around the world. In 1962, the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) published a pamphlet reprinting various collective bargaining provisions that had been included in union contracts in an attempt to deal with the issues of automation. Its recommendations included advanced notice and bargaining

with union representatives, phase-in periods for automation, and insurance and retraining of displaced workers (ILOA). Also in 1962, Thomas Kennedy wrote the book *Automation funds and displaced workers*. The idea was to look at multiple instances in which industries that were displacing workers through automation could set up funds that would ease the difficulties caused by technological unemployment (Kennedy, 1962). Within the United States, they included case studies and discussions of the New York Longshore Container and Bulk Sugar Funds, and the Armour Automation Fund.

In 1963 the US National Institute of Labor Education (NILE), an educational group sponsored by the AFL-CIO, set out a proposal for the production of educational materials that would help people in everyday situations comprehend new technologies in the workplace, and to decide whether to support certain union decisions regarding technology, and whether to obtain more technical education or retraining. NILE decided that producing a film would be a good way of presenting the issues, with a focus on how technological change might impact families, but also on its impacts on older workers, minority workers and women workers. As the pitch stated: “Union efforts can be described through demonstrations and/or presentations at congressional hearings. The conclusion, which would be a judge’s summation, might leave the final decision [about automation] open for the audience to make” (ILOA).

In 1964, US President Lyndon B. Johnson commissioned a blue-ribbon National Commission on Technology, Automation, and Economic Progress, which was concerned enough about technological unemployment that it recommended a minimum income for families, with the Government functioning as an employer of last resort for those who might become the long-term jobless. The report also advocated for free community colleges that would provide vocational training, and for economic development areas. Throughout the 1960s, similar studies were carried out and similar concerns were voiced by educators, unions and academics who were all studying the issues of automation. Attorney Benjamin Kirsh noted that automation threw into question various rates of pay, hours, skill levels and other issues that had been routine under older collective bargaining agreements.

In 1969, a group called the Salzburg Assembly on the Impact of New Technology met to discuss the impact that technology was having in Europe. Louis Turner, a sociologist from the United Kingdom, who also worked as a consultant for the ILO, was the author of the meeting report. As it noted:

Historically man has had to adapt himself to the machine rather than the other way round. One of the great challenges of our time is to reverse this relationship and make technology responsive to man’s needs and not to use it simply as a proliferation of conventional goods and services. This kind of technology will derive from the social sciences and the humanities as well as from the physical and biological sciences. It will be directed to enriching human personality and values, to enhancing satisfaction from work, to improving the environment and to rehabilitating natural resources (ILOA).

The document continued by discussing how science policy largely seemed to focus on how countries could out-compete each other, lamenting the lack of “systematic thinking about how technological development can be planned from

the beginning with social goals in mind. [Our group] feels the need for increasing the social and political control of technological advance". Relevant topics of discussion included "the impact of automation on labour. The social impact of computers. The impact of technology on work and leisure. The consequences of supersonic transport. The impact of radical improvements in communications upon urban design and function. The impact of education technology. The impact of weather modification technology..." (ibid.).

This thoughtful dialogue on work and automation found its way to the ILO.

2.2. ILO activities and dialogue on automation

Expert reports, bulletins and letters from the ILO archives illuminate a dialogue in the 1960s that touches on many issues of current interest today. These various documents discuss automation, globalization, the growth of the knowledge economy and the need for occupational training, education and lifelong learning. Different policy options were discussed, including the use of workplace dialogue among management, unions, workers and consumers, to implement technology and reductions in working hours. While trends and solutions were correctly diagnosed and thoughtfully analysed in various formats during the 1960s, unfortunately no meaningful change or legal reform resulted from these studies and recommendations.

The groundwork for the ILO's work on automation in the 1960s was actually set in motion in the 1950s. In 1956, the 39th Session of the International Labour Conference adopted a "Resolution concerning automation" (RCA). The RCA recognized that automation was a cross-cutting trend across countries that would have an impact on "productivity, employment, training, wages, hours, safety and other conditions of work, social security, various forms of protection against unemployment, and labour-management relations in ... different countries" (ILO, 1956, p. 1). The RCA recommended measures at the national level to "facilitate orderly adjustment to technological advance, to avoid or hold to a minimum the social dislocations and human costs which may be involved in such progress..." (ibid.). It further recommended that national governments study and examine the economic and social implications of technological developments; that governments, and worker and employer organizations consult in order to plan ahead for any social or economic problems that could be foreseen as a result of automation, and that proper investments be made "relative to vocation guidance, training and retraining ... and protection against unemployment" (ibid., p. 2). The RCA invited the study and analysis of these questions, noting that the goal was to promote and raise the "standards of living and well-being to the full extent made possible by technological improvements" (ibid.).

In the early 1960s, the ILO International Institute for Labour Studies began organizing a series of thematic research studies and publications, with the purpose of studying cross-cutting trends, going beyond single-country studies (Gaudier, 2001). David Morse, the then Director-General of the ILO, noted that "the development of this kind of research within the Organisation's sphere of action is of great importance for stimulating and guiding its activities. It is useful to encourage new research of this kind of current problems and to coordinate

international research” (ILOA). For Morse, examining changes in the world of work revealed “the inadequacy of our knowledge, the fact that the situation varies considerably from one country to the next and from one industry to the next” prompting the need to “predict and evaluate future trends” (ibid.).

In 1962, Morse commented that the pace of technological innovation was breaking down past occupations and creating new ones, with increased educational requirements (ILO, 1962, pp. 451–452). He believed that “the time ha[d] come for the I.L.O. to take a new initiative in this field, acting as a catalyst to national efforts and promoting fuller technical co-operation among the countries concerned” (ibid., p. 451).

By 1963, the ILO had established a Bureau of Automation (BOA) under the auspices of the Research and Planning Department. The BOA was headed by Ralph Bergmann, and it is mostly his memoranda, notes and letters that comprise the archival records of its activity. From these materials, we can see that Bergmann primarily viewed the bureau he headed as a type of information clearing house that would stimulate and distribute research on work and automation, attempting to make sense of the rapid pace of technological change across nations and industries. Various letters show that Bergmann collected materials on automation from around the world, including early reports on office computerization, a number of studies of automation funds supporting those who had lost their jobs due to technological unemployment and reports from think tanks and academics.

Beginning in 1964, the BOA began publishing a yearly bulletin on “Labour and Automation” which was comprised of contributions from experts who came to the ILO or to other ILO-sponsored meetings to discuss matters pertaining to the rapid automation of certain industries. The bulletins ran throughout the period of the 1960s and covered specific topics including research methods, collections of existing studies on technological change, automation of non-manual workers, and studies of automation in planned economies. Furthermore, three volumes were dedicated in their entirety to manpower readjustment and education programmes.

In 1967, the ILO convened a committee of experts which met for ten days to discuss the issues of automation and technological change, considering manpower studies from nine different countries. From the studies, the experts came to the conclusion that technological change in one country had an impact on the competitiveness of the others, with this effect varying in developing economies. The bulk of the recommendations in their report were focused on retraining and education programmes, noting that flexibility and reallocation of skills were crucial. Aside from focusing on training programmes, the other recommendations in the report involved social insurance and safety networks for those whose jobs were eliminated through technological unemployment. Recommendations included fostering collaboration among governments, employers and workers in order to ease the burden of unemployment and retraining. Examples were provided in which unions had successfully negotiated with management to have “human relations committees” that would consider new technologies, the impact on jobs, retraining and adjustment programmes.

The 1967 meeting concluded with a long discussion of whether there was any room for a standard, a proposal, or any other form of concrete action. Apparently at something of a loss, the experts decided to produce a report and let the Governing Body decide the next stage. The experts considered that to set standards one needed first to study problems and exchange experiences (ILOA). Interestingly, the US delegate to the meeting bemoaned the lack of urgency in the proceedings and its lack of concrete recommendations. He noted that,

[T]hree million unemployed workers in the US could not understand why a society which had reached such an advanced state of scientific and technological progress could not solve its unemployment problems; these workers would not accept the adoption of the present document nor gain any encouragement from it. It was no doubt inevitable that an international report of this nature had to be wary of controversial issues and present a compromise acceptable to participants from different countries. It was nevertheless regrettable ... that these conclusions offered so little of immediate value to a country such as the US where the problems of technological change were most widespread and urgent (ILOA).

In 1969, Bergmann wrote to the ILO International Training Centre in Turin (Italy) about several training projects for “persons concerned with the introduction of modern technology” (ILOA). He developed an outline for a “Seminar on the human problems of computerisation” with a “computer installation in mind” (*ibid.*). It is worth noting that the stated purpose of the seminar was to:

Draw the attention of managers to those measures concerning the displacement, retraining and re-assignment of staff which can be adopted in order that the introduction of the computer will receive support from affected personnel rather than opposition. Besides being socially desirable in their own right, these measures will help to ensure that the new technology yields its fullest potential instead of being hindered by staff resistance (ILOA).

While marketed at managers, the seminar included a section on “manpower planning” laying out protections for workers. Some of these included giving notice to staff, allowing staff inputs and preparing an “automation plan” in advance. Interestingly, albeit ironically, it also called for the following: “guarantee of a job”, “guarantee of no reduction in pay”, together with “[a]ssistance to those forced to leave the establishment”. The training session was to end with a demonstration of the computer.

By the end of the decade, material in the archives became increasingly scarce, and the last bulletin in the series was published in 1969. It seemed, however, that the immediate crisis over automation had passed. It also seemed that efforts by national governments or maybe even multinational efforts by unions were what was needed. The BOA disappeared into the historical records, with its activities and research largely forgotten. In the next section, we will turn to how the BOA’s discourse was, in many ways, ahead of its time, actually speaking more to our time.

3. Suggestions from the past and directions for the future

Modern academic and policy debates about the future of work are framed in such a way that they focus almost entirely on the “new technology” part of the problem. Contrary to many of those approaches, the ILO archives and other

documents from the 1960s advanced many ideas for handling the situations stemming from automation, computers and other new technologies. While each successive generation of labour activists, scholars and policy-makers has grappled with technological change and its effect on the world of work, each new technological stage seems to approach the topic largely as a *tabula rasa*.

Why have these past ideas been so neglected? There are certainly reasons for starting afresh, especially because each type of new technology presents challenges and questions that appear *sui generis* to the scholars studying it. When writing about technology, the sensible urge of scholars is to look forward, not backward, and new technologies are exciting.

There are also practical reasons why scholars approach the study of work and technology as a blank slate. Not all sources are digitized and archival sources can be particularly difficult to obtain. Furthermore, much of the earlier writing or discussions were centred on the technical details of describing processes that we now perceive as commonplace, such as using spreadsheets to complete routine calculations. Some other concerns at the time seem dated, far-fetched or strange to our modern ears. There are entire documents dedicated to discussing whether households would own microcomputers; and more still discussing whether workers would find it boring or demoralizing to be told what to do by a machine. Doing historical research of this type means wading through resources that repeat themselves, are bogged down in technical details, and often speak in platitudes or generalities. While these reasons for ignoring the past sources seem valid, they contribute to a somewhat ahistorical approach, where issues related to the changing workplace are viewed in a vacuum, or only through the lens of the present day.

While the jobs at risk in the 1960s were primarily factory or blue-collar jobs, the insights that the archival sources provide are applicable to many of the problems that we face today. In the 1960s, the solutions that were advanced by unions, academics, government agencies and international organizations included a variety of policy options and regulatory reforms, from reduced working hours to retraining, union negotiations around technological implementation, social safety nets and ensuring that a variety of people had access to the new technologies. And yet, the language used was quite abstract; the policies proposed were never implemented, and some of them were never translated into concrete regulation. It is time to re-open the conversation, and then see how those past proposals might apply in the context of the next generation of modern technologies.

3.1. Shorter working hours

In one particularly well-known essay entitled “Economic possibilities for our grandchildren” – originally delivered as a lecture in 1928 – John Maynard Keynes looked at the scope of economic progress and made predictions for the future (Keynes, 1931). Despite the context and timing of his essay, which was published during the Great Depression, Keynes’s outlook was optimistic. With new technologies being unleashed seemingly daily, and increasingly fewer workers needing to be employed in agriculture, Keynes foresaw industry making a resurgence and becoming even more efficient. While technological unemployment might be a concern, he predicted a world in which people would generally work fewer hours, and the primary concern would

not be survival, but rather finding productive and fulfilling uses and activities alongside a 15-hour work week. Needless to say, Keynes's predictions have not come true, with some commentators noting that his predictions were wrong or even "outlandish" (Messenger, 2018, p. 1).

Keynes was certainly not alone in focusing on reduced working time or in suggesting that increased automation would result in greater leisure. In the 1950s and 1960s, many actively debated the issue, wondering what would become of people or what they might do if they suddenly had large amounts of free time on their hands. Burtle (1957) suggested that we would gradually see a 30-hour work week emerge, and that if automation continued, many people might either desire a second job, or else return to labour-intensive artisanal methods of production (*ibid.*, pp. 510–511).

In the words of Goodman: "It has even been darkly hinted that, with electronic robots, a lot of people can stay home altogether" (1959, p. 70). Speaking at the Ontario Conference on Automation and Social Change in 1963, John I. Snyder, Jr., Chairman and President of U.S. Industries Inc., indicated that "[w]orking with one major university, we are trying to analyse how effective the shorter work week may be as a temporary or long-term solution to unemployment caused by automation..." (BOA files, ILOA).

The ILO took up the issue in 1967 when experts disagreed on whether some forms of automation might be damaging to workers, especially those who might have more free time on their hands. As one contributor to the experts meeting put it, "those who talk about the need to plan for the worker's use of leisure really mean that they don't approve of what he does in his spare time. The workers themselves have no problem" (ILO Meeting of Experts on Automation, 1967, ILOA).

In terms of their applicability to our current situation, these predictions of a shorter work week have yet to come to pass, and reductions of working hours have not taken hold. Why did this not happen? The estimate of a 30-hour work week would have seemed to be realistic enough, especially given the concerns that machines, robots or computers could raise the standard of living and also free people from various work chores and tasks.

Instead, work seems to have undergone a bimodal distribution. Returns to labour in the past decade have remained largely stagnant, and the power of capital vis-à-vis labour seems to have grown at the same time as income inequality has soared (Piketty, 2014). Workers at both the top and bottom of the pay scale are working more hours, while many of the jobs in the middle have been deskilled and reduced. Would a shorter work week be one way of dealing with the flexibility of the gig economy? For a certain group of workers who may be trying to juggle competing life and family demands for their time, a shorter work week and more flexibility might be the policy outcome they are looking for. Even with a shorter week, the benefits could flow from the work relationship in the same way, ensuring gig workers a social safety net.

3.2. Universal basic income

Taking the last proposal a step further, if working hours became seriously reduced, they might become so minimal that it would be necessary to consider other options for support and sustenance apart from the employment relation-

ship. The ILO took up some of this discussion in 1963, when the then Director-General David Morse noted:

Some ... economists have already foreshadowed a need to ensure capacity to consume independently of whether or not a person is productively employed; and a number of economists are focusing attention on what is often called the “leisure problem”. Technological progress may in years to come be instrumental in bringing about major changes in our social ideas concerning employment and leisure. We are still, however, by and large far from ready to follow through the logic of new modes of production when they encounter long-established habits of thought about social organization...We are confronted with the fact that the technology, whether in agriculture or in industry which is most capable of yielding the greatest increase in production is least capable of expanding employment. This is why automation has become a major public issue in America, because it has been held responsible for the recent unacceptable levels of unemployment. I believe automation is only partially responsible; but is proving to be extremely difficult to adjust economic policy and particular levels of effective demand to a situation of rapid technological change (ILOA).

However, while many of these ideas were discussed in the BOA correspondence, the idea of a subsidy or basic income apart from work never crystallized into a policy proposal. Although some forms of support or basic income have been tried as limited experiments, they have yet to be implemented on a wider scale.

In the current context, however, universal basic income (UBI) has garnered serious support among academics and business professionals. Notable business and technology leaders, such as Elon Musk, Mark Zuckerberg and Richard Branson, have voiced support for some form of guaranteed income disconnected from labour. As in the 1960s, support for such an ambitious policy largely stems from the fear that automation and AI will ultimately lead to technological unemployment. Proponents argue that today, unlike the 1960s, AI technology is “refining cognitive and sensory capabilities that had long been thought to be uniquely human” (Estlund, 2018, p. 264), and thus poses a uniquely profound threat to the labour market. While the severity with which future automation will disrupt the workforce is up for debate, UBI remains a serious policy consideration with which to offset a shrinking need for human labour. However, even in a utopian UBI society, commentators still recognize the importance of work *per se*. Cynthia Estlund argues that work itself is “central not only to most people’s identity, but to our collective social and political life... [It] fosters social interaction and social integration, solidarity and friendship, and cooperation and compromise” (ibid., p. 277). So, while UBI may be a solution to some of the financial issues that arise from an increasingly automated society, many people maintain that there are still interpersonal and social needs that will compel individuals to seek out some form of work and employment.

Yet, if wages from the new forms of work are low, there might be a need for a subsidy for those who do not receive an adequate income. Political will to recognize that various apps are providing socially valuable services, may encourage a wide subsidy of their implementation. Realistically, there might be some concerns about the political feasibility of implementing a UBI at a national level. Replacing a system in which work and the standard working hours are seen as the basis for earning a living with another system could be difficult to envision

on a social and political level. Yet the reported low wages of crowdwork and gig work may provide an impetus to think about how such universal minimum incomes might be structured.

3.3. Sharing the gains of automation

Aside from the reduction of working time and basic income, ILO discussions also noted the idea of sharing the upsides of automation with workers, or at the least of making sure that the gains were shared more widely within society. This picks up on some of the ideas floated by Attorney Benjamin Kirsh in his article “Changing character of production jobs will test labor–management relations”. Interestingly, he notes the idea that “a percentage share of the gains of labor-savings brought about by automation may be given to the workers who survive displacement” (1965, p. 62). As noted in the ILO report from 1967:

[A]dvanced technology generates productivity gains which may be taken, in part, in the form of reduced hours. In the future as in the past, workers are likely to prefer part of their rising living standards in the form of increased leisure. At any moment of time, however, this choice will be determined largely by the particular country's unmet public and private needs for more goods and services as compared to the desire for more leisure time. However, it should be re-emphasized that gains from technological change, whether in the form of leisure or in the form of goods and services, should be widely distributed throughout the society (ILOA).

As mentioned before, during the 1960s unions began to include automation clauses in their collective bargaining agreements. Such clauses provided for consultation with the union before new processes or technologies were implemented. Workers' groups could then bargain ahead of changes and plan for them, including through retraining or upskilling for other types of work (Kirsh, 1964).

In today's technological environment, in addition to consultation before implementing new processes, this would involve collective bargaining over the use of algorithms, AI or people analytics in the workplace. Furthermore, given that new technologies such as cloud computing allow for the generation of data, unions and their members – as the originators of much of that data – should be able to share in some of its productivity- and profit-boosting uses. In this way, unions could bargain to allow their members to share in the gains promised by technology.

3.4. Early warning systems and future forecasting

In 1963, John I. Snyder, Jr., informed the Ontario Conference on Automation and Social Change that “at the request of [New York City] Mayor Robert Wagner, we are attempting to set up the structure for a so-called early warning system which will show us in advance where displacements are likely to occur, where other work may be found, and what kind of retraining problems we will have to solve to fill the new positions” (ILOA). In 1969, the Salzburg group (paradoxically) noted that technology could be used to predict the future of work and technology:

Today, our attention is focused primarily on immediate issues and these are not often considered in terms of long range directions and outcomes for our society. Technological forecasting should be used to consider alternative futures, so that science policies cease to be aimed at the smooth implementation of a future which is seen as inevitable, should genuinely consider which policies are most beneficial

in the long run. One must therefore develop the capability to define targets and objectives and to invest in alternative futures which will give guidance to national policy makers (ILOA).

Technology should therefore be used to forecast and predict the areas that will be most necessary for human input and labour, giving a better sense of what training and education is necessary for the future of work. This is an interesting idea that never caught on, but that makes a great deal of sense. The “early warning” system seems to be largely focused on the groups that adopt technology early, or the new businesses that implement it and the academics that follow those businesses. However, a more systematic “early warning system” might be in order instead of the current *ad hoc* system. Whether that is a government labour agency or just individuals writing on blogs to alert others to changes in technology, it might make sense to think about and plan responses to technology in the workplace with more advance notice.

The US Government Accountability Office (GAO) has advocated for one such systemic response. In its March 2019 report on workforce automation, it sought to examine how well prepared US federal agencies were to monitor workforce changes, promote economic growth and support workers who might be negatively affected by automation (GAO, 2019). Central to the report was the GAO’s recommendation that the US Bureau of Labor Statistics develop and implement mechanisms with which to collect data and monitor workforce changes that result from technology and automation (*ibid.*, p. 54). The GAO reported that the lack of data on automation and advanced technology had prevented federal agencies from examining how these technologies – specifically automation and AI – had created shifts in the labour market (*ibid.*, p. 53). Critically, the GAO stressed that without such data “the workforce effects ... of advanced technologies will remain unclear, job seekers may not be fully informed about their best future career prospects, and federally funded programs to support workers may be misaligned with labor market realities” (*ibid.*, pp. 53–54).

Similarly, there are a number of worker-driven oversight systems that monitor technology in the workplace. Other worker bulletin boards and rating services, like Turker Nation and Turkopticon allow online crowdworkers to rate, review and discuss tasks and hiring entities before beginning to work. Ironically, they are using technology to monitor technology. Another similar forum is coworker.org, which allows individuals to “start, run, and win campaigns to change [their] workplace”. The website allows any worker to start an online campaign that can be used to demonstrate support for a particular change within a company. Recently, Uber drivers used coworker.org to petition for an in-app tipping feature. Based on worker support for the online initiative (as well as several lawsuits), Uber ultimately implemented the requested feature. Though not exactly the “early warning systems” described by Snyder, these employee oversight systems are also powerful tools to allow workers to shape the future of work and technology.

3.5. What the ILO could not predict

Despite the robust discussion on the future of automation and technology in the 1960s, there are several modern issues that the ILO did not predict. The first is the precipitous decline of organized labour unions and worker

bargaining power in general. The ILO and the BOA foresaw organized labour unions acting as a protective force against widespread job loss and worker disempowerment. In the intervening decades, however, organized labour and worker bargaining power have declined – often substantially. In the United States, union membership rates have fallen from nearly 30 per cent of the workforce in the early 1960s to cover approximately 10 per cent today (BLS, 2018). Even in Europe, where much larger percentages of the working population belong to unions, union membership rates have dropped substantially since the 1970s and 1980s. The overall decline in organized labour has led to power imbalances between workers and firm owners who may experiment with workplace technology without much in the way of worker voice.

The former President of the Service Employees International Union, Andy Stern, believes that as technology continues to automate more full-time jobs, the role of collective bargaining itself will similarly diminish. An increasingly automated economy, he suggests, will so significantly diminish the full-time labour market that it will marginalize the role of collective bargaining (Stern, 2016).

In this regard, the ILO did not discuss or foresee structural issues of workplace fissuring, worker misclassification and task fragmentation that have emerged in the past two decades. The recent rise of online technology platforms and the “gig economy” have upended traditional labour structures and employment relationships. Instead of hiring full-time workers, many firms classify their workers as independent contractors, which allows them to avoid the responsibilities – such as health-care provisions and other entitlements – that previously accompanied a traditional employment relationship. Additionally, when employees are classified as contractors, they often cannot avail themselves of employment laws that are designed to protect workers with regard to minimum wages, discrimination, unemployment insurance and worker compensation (Cherry, 2016). While recent class action lawsuits in the United States have attempted to push back against “independent contractor” classifications of gig work, courts have largely failed to provide definitive guidance on the legality of the practice (Cherry, 2019).

Likewise, in the 1960s the ILO never imagined the type of international crowdwork platforms that exist today, with their globally distributed workforces. A platform could have work requests from dozens of countries around the world, have servers and operations in another country, and have workers in different jurisdictions. In the future this may present complicated legal problems of jurisdiction, conflict of laws and forum selection (*ibid.*). However, the ILO has successfully dealt with situations where there are many different jurisdictions and national regulations at play, specifically with regard to maritime workers. Workers on the oceans may be residents of one country, be in transit to a second and work on a ship that is owned by someone in a third, while the ship is flying the flag of a fourth country. All of this points to the need for potential sectoral regulation in order to make sure that gig workers receive equal conditions to those performing the same tasks on a computer in an office environment.

Ultimately, sharp declines in organized labour and a rise in worker misclassification have created new problems that are largely beyond the ILO’s original automation concerns.

3.6. Diversity considerations of gender and ethnicity

While the ILO's discourse in the 1960s provides a helpful framework on the current discourse of labour, technology and automation, some of the discussion was structurally limited. Leadership of the ILO was not diverse and, as a result, there was little discussion of how automation would affect women or ethnic minorities.

In 2018, the World Economic Forum (WEF) published its Global Gender Gap Report, which included a discussion of the current and emerging gender gap in AI-related skills (WEF, 2018, p. v). In its 149-country survey, the WEF found that only 22 per cent of women were employed in AI occupations, compared with 78 per cent of men (*ibid.*, p. 28). Given that the modern labour market is increasingly dependent on AI-skilled workers, this 72 per cent gender gap was seen by the WEF as an urgent issue that could continue to have far-reaching consequences for women's current and future labour market participation. It warned that such a gap could continue to exacerbate gender inequality in the future (*ibid.*, p. 32).

Other studies have suggested that increasing automation will disproportionately affect ethnic minorities. A recent study of the workforce in the United States by the Institute for Women's Policy Research (IWPR) found that both Caucasian women and minority women occupied a greater number of the professions that were at the highest risk of being eliminated due to future automation (IWPR, 2019, p. 70). Indeed, according to its report, Hispanic women were the most likely to hold positions in danger of automation, accounting for 32 per cent of women in these at-risk occupations (*ibid.*, p. 14). Additionally, the study found that the impacts of automation are more likely to affect women's better-paid jobs than men's, leaving them more economically vulnerable. Among men, occupations that faced the highest risk of automation were those that were the lowest paying, whereas in the case of women's occupations these were "equally spread out across better- and low-paid occupations" (*ibid.*, p. 26). Although diversity issues were largely neglected in the 1960s (due to historical exclusion), future solutions to address the effects of automation should include ways to reduce and eliminate such systemic inequalities.

4. Conclusions

Many of the policy recommendations mentioned in the last section were introduced in the 1960s, but they often seem far ahead of their time, more at home in the contemporary discourse about work and automation. It is accurate to say that strands of both utopian and dystopian thought figured prominently in writing about work and technology in the 1960s.

Utopian thinking about work, technology and automation reflected the excitement about new products and technological progress, focusing on ways in which automation would usher in a new age of ease and leisure. The issue of most concern was how people would occupy their leisure time when automation had taken care of most of the "dirty work". Dystopian thinkers, on the other hand, predicted dire catastrophe as robots displaced workers and upset various economic and social systems. The dystopian premise saw entire social and

economic systems (capitalist and Communist alike) poised on the brink of collapse due to a lack of waged work. Both strands thus focused on the following question: if full-time employment – the basis of the social contract and the economic system, as well as a way of ordering one’s life – were displaced, what would step in to replace it? As a consequence, both schools of thought proposed alternatives to full-time employment. Utopians proposed this out of hope and practicality, and with enthusiasm for what was to come. Dystopian thinkers made these proposals out of fear.

Whatever their motivations, the proposals for change – we know – were neither heard nor implemented in the 1960s. And while some jobs and forms of work disappeared, became automated or changed, new jobs generally took their place. However, that was not without significant social and economic disruption. In subsequent decades global inequality only worsened. Rather than a reduction in working time, many workers had to work extreme hours in order to experience wage growth; while others found themselves underemployed or in precarious employment.

As we consider how new technologies will impact work through on-demand platforms, AI, people analytics and 3D printing, among others, we can see the connections to the previous discourse. Some of the language employed by thinkers in the 1960s could apply equally well to the current changes in technology. Today, many are excited about the potential efficiencies of new types of work. Others, however, see new technologies as a serious threat to the traditional standard model of employment. It is, therefore, all the more important to return to the ideas and potential solutions suggested by the futurists of the 1960s.

What would concrete implementation of those 1960s ideas look like in our modern technological context? While UBI may seem to be a far-fetched proposal, many would seriously consider the idea of spreading work among many workers through reduced working hours or flexible scheduling. With France’s adoption of a 35-hour work week, the idea of using more efficient production methods to reduce working hours is a policy proposal that deserves more consideration. Another idea that is worth revisiting relates to the efficiencies created by new technologies to benefit workers. This could possibly result in laws promoting the creation of platform cooperatives or other technology businesses that are owned by workers, allowing them to retain more of the benefits of increased efficiency.

In her article “Three big ideas for a future of less work”, Professor Cynthia Estlund (2019) considers proposals for UBI, a federal job guarantee and shorter hours. As she notes, these ideas cannot all be fully implemented: to institute a UBI would exclude a federal job guarantee and governments would have to choose between these policy proposals. Instead of choosing one or other of these ideas, Estlund suggests that there may be ways to provide some modest fixes at the margins that would enable governments to do some of each of these. They could perhaps provide a certain level of income or benefits, a modicum of guaranteed work for those who want it, and some regulatory tinkering to ensure that work is available via shorter hours. It is again evident that the ideas of the 1960s are still part of the policy-maker’s toolkit in the present day.

While the technological landscape has changed, both the optimism and fears for the future that were expressed in the 1960s seem incredibly familiar and current. As this article has demonstrated, the policy proposals considered during the 1960s are not just historical artefacts of the ILO archives. It is important to continue to consider what to do about their implementation and how we might translate them into action in facing modern problems.

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