

Conclusion: Emerging Changes and Future Directions?

While the future is basically unknowable, one thing is certain. The world of work is not going to *be* disrupted, it *is* disrupted, with more disturbances to come. Traditional work practices and labor markets as defined by the 20th century are therefore under increasing pressure to remain relevant as we progress further into the 21st century. This book examined institutions, frameworks, and technologies that have emerged to support and facilitate these changes that are occurring in the world of work. It further considered how policy makers, practitioners, and workers may better address these challenges and/or adapt to changing work environments.

What then have we learnt and where are these changes likely to take us? In answering this question, this chapter considers the role of Cloud-computing technologies in facilitating new work institutions and frameworks, before contrasting, comparing, and synthesizing some of the main elements that have been discussed throughout the book. This includes identifying common themes between what may initially appear to be divergent topics.

The Cloud as a Facilitator of Change

Our analysis of the changing world of work shows that Cloud computing truly is a disruptive technology that has facilitated

many of the emerging institutions and workplace frameworks that have been analyzed and discussed in this book (see Figure C.1). Cloud-based services, allied to increasingly ubiquitous internet access, underpin decentralized mobile workforces (including telework), coworking services, the “human Cloud,” and OEL. Big data algorithms and AI also often rely on Cloud-based platforms and their associated computational power, while Cloud technologies support SME entrepreneurship, as outlined in further detail below.

Despite the promise of Cloud-based ICTs, Gutek succinctly summed up the conflicting impacts of new technologies by considering the contrasting questions “what can technology do *for* you?,” as opposed to “what can technology do *to* you?” (Gutek, 1983, as in Korac-Kakabadse, Kouzmin, & Korac-Kakabadse, 2001, p. 90). These conflicting impacts have been detailed throughout this book, including the current blurring of work and private life, increasing global labor market competition, and the potential effects of AI and automation on labor markets.

The current sheer speed of technological change has exacerbated the problems in dealing with these challenges. This has created a degree of ethical lag, as the rapid adoption and use of

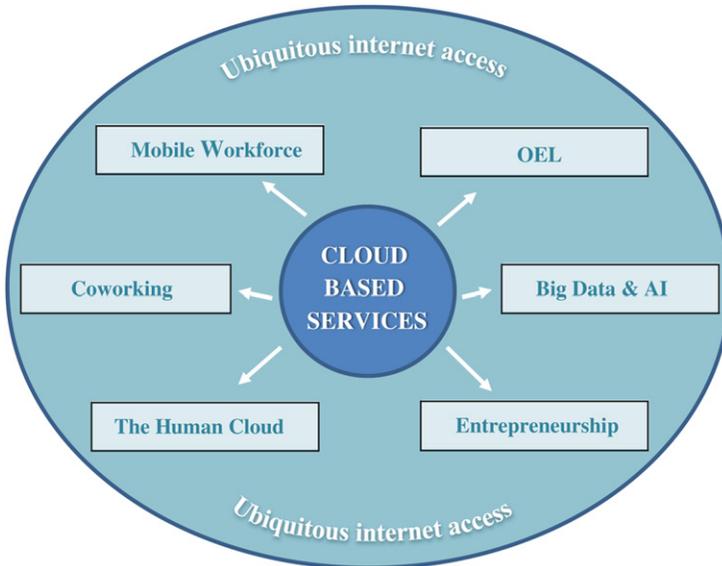


Figure C.1. Cloud Technologies as Enablers and Facilitators of New Workplace Institutions and Frameworks.

these technologies by both firms and the general public has tended to move ahead of any broad-based consideration of their longer-term workplace and social impacts. Government actions (or lack of them) around the world also suggest that government leaders often fail to fully understand the effects of new technologies on labor markets and work practices. The following discussion further considers their impacts in relation to the major themes identified in the book.

Workplace and Labor Market Themes

As outlined in the Introduction, this book was divided into three sections to better identify and link what may formerly have been considered disparate areas of research into a cohesive text (see [Figure C.2](#)). The following discussion examines these sections and further outlines how they may overlap and mutually support one another.

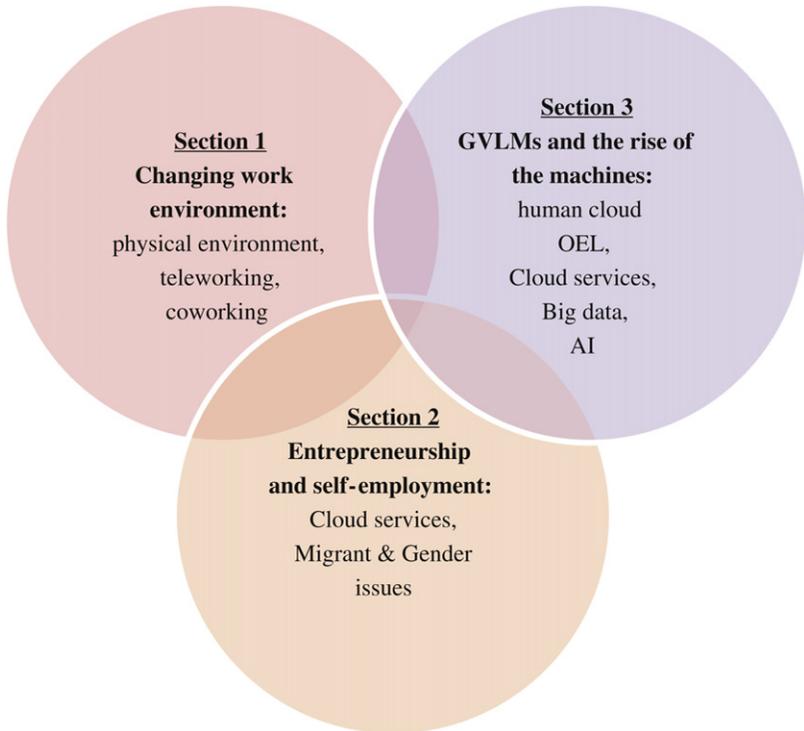


Figure C.2. Workplace and Labor Market Themes.

THE CHANGING WORK ENVIRONMENT

Much of our discussion on the changing work environment demonstrated that workplace change rarely goes in one linear direction. Rather it outlined the complexity and diverse range of modern work environments and their impacts on work practices. The changing physical work environment, for example, demonstrated the juxtaposition between continued investments in centralized work spaces alongside the rise of decentralized mobile workforces. To paraphrase Mark Twain, the research suggested that the death of the centralized office may have been greatly exaggerated, with organizations still spending large amounts of money on office design and implementation (see Chapter 1). New workplace designs, however, are often quite different from former “traditional” office spaces (Goldhill, 2013). This includes workplace features, such as, open plan work spaces, “quiet areas,” time out zones, and formal and informal collaborative zones. High-tech firms, such as Apple, Google, and Pixar, have been at the forefront of experimenting with new approaches to workplace design.

Firms would not make these kinds of investments in physical infrastructure if they did not think that there was a return in terms of reduced costs and/or improved worker productivity. These two factors may, however, require trade-offs that reduce the overall effectiveness of workplaces. The dreaded open plan office is a case in point, with increasing research pointing to the negative impacts of noise and distractions on worker performance leading to reduced (not increased) productivity levels in these types of work environments (Treasure, 2012). Hot desking strategies face similar challenges.

The interesting dichotomy is that the above new investments in centralized physical workplace infrastructure are operating parallel to the rise of the boundary-less/mobile work force, as new Cloud-based information and communications technologies (ICTs) make the location of work less relevant (Ituma & Simpson, 2010; Saval, 2014; Tremblay, 2003). Work environments are therefore increasingly characterized by hybrid disaggregated systems that include both centralized and decentralized work practices. As regards the latter, studies point to the continued rise in technologically mediated work, as firms increase their use of mobile workers and “virtual distributed teams” (West, 2015; Wrike, 2012). Telework in this context has advanced far beyond home-based working. Coworking spaces, incubators,

meet-up groups, and other “third places” in the public realm, for example, exemplify the institutions and practices that have developed to support mobile work practices (see Chapters 2 and 3). The continued development of global virtual labor markets (GVLMS) will only hasten these trends (see Chapter 6).

While these changes have been facilitated by ICT developments, including the rapid adoption of smart phones and tablets, they further reflect societal changes, as “dual-income” and single-parent households strive to address the often competing demands and responsibilities of work and family roles (Edwards & Wajcman, 2005; Parasuraman & Greenhaus, 1997; Strachan, 2004, p. 14; Wheatley, 2012). Telework arrangements may therefore afford workers more flexibility to better juggle work and family responsibilities. From an employee’s perspective, flexibility in this context, however, can be a double-edged sword. While the technologies underpinning telework work arrangements have the potential to improve work/life balance, they also decrease the demarcation between work and private life. The ritual checking of smart phones and tablets for emails and other work-related material outside of “normal” working hours is now well-established.

Organizations introduce new technologies to improve productivity. Mason (2015), for example, has described the vast number of people now conducting work on plane flights as factories in the sky. ICTs have further been linked to perceived increased expectations on the part of management, either explicitly or implicitly, for workers to be almost permanently on call. As outlined in Chapter 2, this has been likened to an electronic dog leash! (Mosbergen, 2016). This in turn may lead to extended work hours, work intensification, and employee burn out, with workers struggling to find an “off button” to turn themselves and their thought processes away from work matters. It further questions whether the term “normal” working hours still applies in many modern work contexts. The French government’s attempt to address this problem by introducing legislation that gives workers the right to disconnect from ICT-supported work-related activities, such as emails, after work (Mosbergen, 2016), suggests that firms need to better address this problem if they wish to stave off further regulation, as pressure builds on governments in other countries to follow suit.

As mentioned above, workplace change, however, rarely goes in just one direction. In this regard, research showed that workers were also increasingly accessing the internet during

working time to conduct *private* activities, such as online interaction with social media and chat groups (Demasi & Huntley, 2014). Therefore, while workers may be accessing work-related material outside of normal working hours, they are increasingly performing private nonwork related activities during work. What we are witnessing here could therefore be better described as a blurring of work and private life, rather than traditional work intensification. This is not to underestimate the need for workers to have a reasonable amount of down time both for their health and their ability to function at full capacity over the longer-term.

Our discussion of the rise of the virtual work force also found that effective teleworking does not simply occur with the arrival of newly purchased ICTs. In many ways, the purchase of new technologies is the easy part (see Ross, 2015). What may be more difficult is the ability to inculcate managers and workers with the necessary skills to effectively operate in virtual environments. This requires changes to work habits, thought patterns, and processes, which may not come naturally to managers and workers who are used to working in more traditional face-to-face work environments. Failure to master these skills then reduces any potential gains from the use of these technologies. Put more simply, if managers and workers cannot use these tools effectively then the purchase of these technologies is likely to be a waste of time and money and may even end up doing more harm than good!

Our discussion showed that trust is a further potential barrier to the successful implementation of mobile and teleworking arrangements. This includes managers being concerned about potential employee shirking when they are outside of their direct face-to-face control. From the perspective of many traditional managers, “if they’re not in the office then they’re not working.” This is in some ways illogical, given the relative ease with which firms can now use workplace monitoring software to observe and record their employees’ electronic activities, such as such as time spent on tasks, email content, internet activities, and computer keystrokes (Ciocchetti, 2011). As outlined in Chapter 6, workplace monitoring software is increasingly used by firms managing GVLMS. Use of such monitoring software, however, may reduce employee trust levels and raise potential “big brother” concerns. It could further be argued that workers are also human beings and not the endlessly performing machines discussed in Chapter 7.

Coworking centers have emerged as institutions that develop the teleworker and/or mobile worker paradigm, by providing an increasingly popular alternative work space to the centralized office or working from home dichotomy (Deskmag, 2017; Leclercq-Vandelannoitte & Isaac, 2016; see Chapter 3). They further operate at the conjunction of new workplace spatial designs and ICT-supported workplace collaborative technologies (Andrade et al., 2013; Ross & Blumenstein, 2013, 2014). Claimed coworking center benefits often center on their ability to foster face-to-face collaborative activities, including amongst unaffiliated coworkers. Coworking proponents claim that this knowledge and information sharing in turn fosters creativity and innovation, which then adds value to coworking center member projects and work-related activities. This may provide particular benefits for entrepreneurial activities such as start-up firms, as outlined in Chapter 4.

Our discussion, however, showed that coworking centers are multifaceted institutions that serve different types of clientele. This includes good neighbor coworking center models, that foster neighborly activities which support parallel individually focused work activities, and good partner models, that foster collaboration and team work (see Spinuzzi, 2012). Some government agencies and organizations are also allowing their workers to use regionally based coworking centers as alternatives to working from home, which links into the telework/flexible working frameworks discussed above.

Coworking centers have also been linked to the rise in precarious and atypical work that is occurring in many industrialized economies (Land et al., 2012; see also our discussion in Chapters 6 and 7). This perspective suggests that the rise in the number of “self-employed” workers operating from coworking centers reflects the growth of insecure short-term project and fixed-term contract work (Land et al., 2012; Standing, 2011; also see Chapter 6). Land et al. (2012, p. 47) advise that coworkers operating on a freelance or self-employed basis are in fact paying the costs of production for these goods and/or services. This in turn enables firms to secure this labor at a cheaper cost. This perspective mirrors many of the issues faced by “self-employed” workers in the “gig” economy (see discussion in Chapter 6).

The merits of collaborative versus individually focused work also provide some interesting grounds for conjecture. While the benefits of collaborative activities, as discussed throughout the book, are often almost taken as a given, research suggests that

organizations may be placing an overemphasis on group collaborative activities and not allowing their workers enough time to focus on individual tasks (Cross et al., 2016). The theory of “escalating citizenship” further suggests that workplace collaborative requirements increase the demands being placed on the often relatively few high-performing workers who contribute the most to meetings and other collaborative activities (Bolino, 2016, as in Cross et al., 2016). This in turn may lead to potential employee burnout amongst these high-value workers (Bolino, 2016, as in Cross et al., 2016). As discussed above, workplace environments that promote interaction and collaboration, may also cause worker distractions that lower worker productivity and well-being (see Chapter 1). This is not to say that collaboration between workers is not potentially important. Like most workplace strategies, however, it suggests that organizations should not take a one size fits all approach to this issue, as different organizations, sectors, product markets, and worker groups, may require different collaborative/individually focused work requirements.

ENTREPRENEURSHIP AND SELF-EMPLOYMENT

In a world of shrinking full-time employment, rising precarious work, North/South global labor market competition and the loss of “routine work” to artificial intelligence (AI), entrepreneurship and self-employment may increasingly become “the new normal” as workers strive to gain incomes in this increasingly competitive environment. Such changes have already been reflected in the rise of institutions and technologies that support self-employed work, such as coworking centers, the human Cloud, and the gig economy. Coworking centers, for example, provide relatively cheap access to office space and networking opportunities for freelance and professional workers, entrepreneurs, and start-up firms (Spinuzzi, 2012; see Chapter 3), while the human Cloud allows workers to bid for contract work on a global basis (see Chapter 6).

Governments have further promoted entrepreneurship as a way to support continued economic development and job creation in globally competitive environments (Audretsch et al., 2006; Hussain et al., 2011; Parker, 2009; van Praag & Versloot, 2008). Research suggests that governments should also target potential entrepreneurial and self-employment opportunities for disadvantaged groups, such as women and migrants, as these

groups often experience less access to traditional employment opportunities owing to social, cultural, and structural barriers, work and family obligations, segmented labor markets, and/or discriminatory practices in the hiring of skilled migrant professionals (Azmat, 2014; Heilbrunn et al., 2014; Ressia et al., in press; Weichselbaumer, 2016). Disadvantaged groups also face challenges in terms of access and ability to utilize new technologies that may support entrepreneurial activities. Entrepreneurship and self-employment opportunities, including greater access to new technologies, may then provide disadvantaged groups with alternative income opportunities that provide potential economic gains for the whole community. These opportunities also provide social gains including empowerment and improved self-esteem for the individuals concerned.

Our discussion further showed that Cloud-based technologies are facilitating entrepreneurial behavior, including the capacity for entrepreneurs to create born global firms. The rapidly expanding global app development market was an obvious example of these trends. Cloud-based services are well-suited to small- and medium-size enterprises (SMEs) and help to reduce some of the traditional disadvantages that SMEs and start-ups face in relation to larger firms (see Ross & Blumenstein, 2015). These advantages include cheaper “up-front costs,” as firms shift away from capital investment in ICT infrastructure costs, towards a “pay-on-demand” ICT model. This allows SMEs potential access to high-level ICT products and services which they may not previously have been able to afford. Firms are also not burdened with associated high ICT capital expenditure “sunk costs” that often cannot be retrieved if a project fails. This reduction in opportunity costs has been described as *easy failure*. Cloud-based services are also *scalable*, which allows entrepreneurs and startup firms to quickly scale up their ICT requirements if required. Cloud computing has therefore been a game changer in the way that organizations access and use ICTs, as discussed above.

GVLMS AND THE RISE OF THE MACHINES

Chapter 6 showed that GVLMS are accentuating the trend towards increasingly competitive global labor markets, by allowing organizations to access virtual labor market skills from effectively anyone on the planet who has access to the internet. GVLMS further develop the teleworker and freelance models

outlined above, into decentralized *global* mobile work force frameworks. The “human Cloud” and offshore employee leasing (OEL) models provide interesting examples of GVLMs in practice.

The human Cloud is linked to the “gig” economy and has received increasing attention from commentators and researchers (Beschorner et al., 2015; Kaganer et al., 2012; Kuek et al., 2015; O’Connor, 2015). As its name suggests, human Cloud-based platforms provide an interface that *facilitate* or *broker* deals between firms and prospective workers on a global basis. These platforms then link organizations looking for certain labor market skills with individuals bidding for this work. Much of the work available in the human Cloud is fixed-term project work, with firms and workers entering into some form of contractual agreement (Beschorner et al., 2015).

Our discussion showed that the range of services and governance structures being provided by human Cloud-based platforms also went beyond the “self-employed” internet platform worker typology outlined above. The work on offer, for example, varied from relatively cheap short-term “one off” project jobs to longer-term higher skilled employment. Human Cloud governance structures varied from *open service* platforms that allowed firms and virtual workers to contact each other directly and negotiate some form of contractual agreement (Kuek et al., 2015, p. 11) to *managed service* platforms, where the human Cloud service provider played a greater role in managing the client firm/virtual worker relationship, including vetting and selecting virtual workers on their behalf (Kuek et al., 2015, p. 12).

OEL practices share some similarities with the human Cloud managed services governance model in that they are also a form of co-managed outsourcing that provide a “hybrid third way” alternative offshore outsourcing model, which sits between traditional third-party offshore outsourcing and captive offshoring (Ace Infoway, 2016; Ross, 2016). As outlined in Chapter 6, OEL services operate under different names, including “staff leasing arrangements,” “co-managed operations,” and “Professional Employer Organisations” (PEOs). The general OEL model, however, exhibits similar characteristics and practices. These include the OEL firm sourcing, vetting, and employing local professional workers on behalf of their overseas-based clients. They further provide relatively cheap desk space and internet facilities for the host country-based workers and some level of ongoing client

support. The OEL firm then charges the client a regular fee to cover these services (Ross, 2016).

The important distinction between OEL services and traditional outsourcing is that while the OEL firm is technically the legal employer of the host country worker, on a day-to-day basis the client firm “manages” their host country-based worker similar to a traditional employer/employee relationship. In contrast to the human Cloud platform worker typology, the host country workers are also usually employed on a full-time basis. This then supports a longer-term on-going employment relationship between the client firm and the host country-based worker. EOL firms also provide advice to clients that is often not available in the human Cloud environment, such as HR advice that may assist in resolving host country worker issues.

OEL services are therefore in many ways a global extension of mobile worker and teleworker arrangements. Cross-cultural and language differences aside, there is now relatively little difference between a Sydney-based firm managing a teleworker in another part of Australia or managing a Filipino-based teleworker based in Manila via OEL arrangements. The major disjunction is that the Filipino worker will be generally be paid far less than their Australian counterpart.

Reduced labor costs and the ability to access skills on a global basis therefore lie at the heart of GVLM strategies. This puts workers in high-wage industrialized countries in direct competition for jobs with workers from lower-wage developing countries. The human Cloud, for instance, has workers bidding against each other across the globe. OEL firms are also generally based in lower income countries, such as India and the Philippines, to leverage relatively cheap labor costs.

As discussed in Chapter 6, globally competitive labor markets are not a new phenomenon, with the relocation of work from higher wage industrialized economies to lower-wage developing countries now well-established. What is new is the range and spread of work that GVLMs are now capable of performing via Cloud-based workplace collaborative tools. This includes formerly “safe” service sector and professional work. While some of the work being outsourced to GVLMs will augment, rather than replace work in high-wage industrialized economies, the ability of GVLMs to perform this increasing range of jobs is likely to place downward pressure on labor costs in industrialized countries over time. Jobs that are less prone to competition from competitive GVLMs include work that requires “nonroutine” and/or

specific skills that are in high global demand or work that requires face-to-face and/or hands on contact.

Is hairdressing therefore the last safe job on earth? Our discussion on the rapid advances occurring in the fields of big data analytics, AI, and automation suggests the answer is “yes, maybe!,” as the fusing of human and machine roles raises questions about the longer-term impacts of these new technologies on labor markets, work practices, and society in general (OECD, 2015a, p. 17). Data driven management (DDM) strategies, for example, have the potential to give machines pre-eminence over workers and allow data driven bureaucrats to dictate our work activities. Algorithmic management has also been linked to increased surveillance of workers. DDM can, however, also empower workers to make better “evidence-based decisions.” Predictive data analytics likewise has potentially positive and negative outcomes, depending on the purpose and the rules governing the underlying algorithms.

Many of the benefits or otherwise of DDM and algorithmic management are linked to the ability of human beings to still make their own independent assessments and conclusions in relation to what the data analytics are telling them. As outlined in Chapter 7, machines do not have a conscious nor do they have any in-built natural ability to determine if something is ethically right or wrong. Rather, they will do whatever the program and/or algorithm tells them to do. Continued on-going human subjective appraisal is therefore crucial to ensuring that strategies such as DDM and algorithmic management do not lead to negative social and workplace outcomes.

Our discussion further showed that many of the issues surrounding machines dictating work activities to humans may soon become academic, as rapid advances in AI, automation and robotics lead to increasing numbers of jobs being replaced by machines. In this situation a machine is not telling you what to do, rather, a machine is replacing you! Concerns over job losses associated with new technologies are not new. The Luddites’ went about destroying machinery that they deemed was replacing their work in the early days of the industrial revolution. As could be expected, however, the Luddites were as unsuccessful as any other group in history in stopping the march of new workplace technologies. History further shows that the introduction of new ICTs has also generally led to the creation of new jobs over time that balance out their original negative employment impacts

(Spiezia 2016). From an optimists perspective therefore, old jobs will disappear and new jobs will be created.

There are nevertheless some provisos here. While new technologies have always impacted on labor markets, the sheer pace of technological change that we are seeing is unprecedented. The rapidly expanding range of jobs being potentially affected by automation also brings into question the ability of economies to create new “replacement” jobs as quickly as they are likely to be lost. Studies, for example, suggested that almost half of US jobs could be at risk (Frey & Osbourne, 2017, p. 268), while the introduction of driverless cars and trucks alone has the potential to replace one of the US’s largest employment sectors. This is not to mention the potential impacts of automation and robotics on employment in the retail, manufacturing, agricultural, and construction sectors. White collar jobs are not immune to these changes either with office support, administration, telemarketing, and BPO roles threatened by advances in AI (Fersht, 2016; Monbiot, 2016).

The impact on white collar roles also threatens GVLM jobs that often support workers in developing countries, as increasingly sophisticated AI algorithms take over “routine” work that was formerly being outsourced and offshored to countries with relatively cheap labor costs. Increasingly sophisticated automation also makes it easier for MNCs to bring back their manufacturing processes to industrialized countries, as machines take over former worker roles. Automation may therefore have negative impacts on developing countries and increase the North/South divide.

While the “reshoring” of some manufacturing work is likely to be looked upon favorably by governments in industrialized countries, it will by no means be a panacea for previous manufacturing job losses. First, many of the former routine jobs will have been replaced by automation, as outlined above, otherwise the manufacturing production would not be coming home. Second, the skills required for the remaining jobs are far different from the jobs that were lost in the past. This process has already occurred in countries such as the United States. As outlined in Chapter 7, by 2014 manufacturing output in the United States was higher than it had ever been, although the number of employed manufacturing workers had decreased markedly (Hicks & Devaraj, 2015). Most of this decrease could be explained by the labor substitution effects of new technologies. Despite the decrease in the number of overall jobs, the sector was

forecasting labor market shortages because they could not find workers with the required skill levels for the new emerging high-tech manufacturing jobs (Roiatti, 2016, p. 1). In this regard, the high school diplomas held by many former US manufacturing workers were not enough for these emerging “middle skill” jobs (Selingo, 2017).

The prospect of large-scale unemployment brought about by automation presents potential challenges for governments seeking to maintain social harmony. The replacement of full-time work with precarious and atypical work across many industrialized economies, as outlined above, also adds to this dilemma. Many of the strategies being promoted by governments and think tanks to address these issues center on labor market skills development. While this may be a laudable aim, some workers will not have the capacity and/or circumstances to be able to upskill for these new positions. Furthermore, while nonroutine and “creative” work is less likely to be automated (Perkio, 2015, p. 37), the jury is still out on whether there are going to be enough nonroutine “creative” jobs to go around; even amongst highly skilled workforces.

These challenges have led to increasing discussions on the need for a universal basic income (UBI). A UBI provides a social safety net that provides a form of “basic economic security” in labor markets that are increasingly shifting towards precarious/non-secure employment (GI, 2016; Klein, 2016). Even the World Economic Forum, hardly a bastion of left-wing thought, has begun to discuss this concept, as firms appear to be belatedly realizing that people without incomes cannot buy goods and services (McFarland, 2017). While the cost of introducing such a program is an obvious constraint, countries such as Finland, Canada, and the Netherlands, are either currently running UBI trials or aiming to run them in the future.

Whichever approach governments choose to take, our discussion suggests that the above potential economic and social costs being caused by these changes will require future governments to find ways to better support workers’ wages if they are to reduce income inequality, avoid social unrest, and maintain reasonable living standards in the context of increasingly automated environments, competitive global labor markets, and precarious employment structures. Possible strategies include job sharing, reduced working hours, government subsidies, increased social benefits, a UBI or some combination of these approaches. Addressing these challenges is likely to require some form of

corporatist consensus approach between governments, employer groups, unions, and other social institutions.

Conclusion

To conclude, are emerging work-related institutions, frameworks, and technologies therefore simply a vehicle for increased labor productivity and neo-Taylorist practices, or can they provide the basis for better work/life balances and more socially inclusive collaborative work practices? (Spreitzer et al., 2015). Are new technologies creating a permanently underemployed disadvantaged class or will economies continue to develop new jobs to replace those being lost to new technologies, as they have generally done in the past? On the macro-level the answer to these questions depends on the choices that governments and society make in relation to how these issues should be addressed. On the micro-level, it depends on how well workers adjust to new and emerging work practices and labor markets.

Workers in this context need to plan for multiple “consecutive careers” supported by on-going skills development, to keep their expertise relevant in rapidly changing work environments. Decreased full-time work opportunities may also require workers to place more emphasis on entrepreneurial and self-employment opportunities as alternative income generating strategies to traditional labor markets. Government policies to supplement workers’ incomes with UBIs coupled with reduced working hours, could also reduce the pressures associated with decreases in full-time work opportunities and improve work/life balance. One thing is certain, adapting to these changes will require considered policy from governments and organizations and informed choices and decisions on the part of individuals, as the latter seek to log on to work in the 21st century.