

Fear and hope in an age of mass automation: debating the future of work

David A. Spencer 

Alternative perspectives from economics and political economy now agree that work is set to disappear through the impact of mass automation. Some worry about the negative effects on unemployment and inequality, while others see the opportunity to extend free time. This paper confronts and criticises these perspectives. It addresses previous visions of an automated ('workless') future presented by Marx and Keynes and shows the enduring barriers to working less in capitalist society. It then questions whether work will be reduced by technological progress; rather, it argues that work will likely persist, despite and indeed because of the wider use of new technology. The threat to workers from technology is seen to come more from the erosion in the quality of work than from the loss of work. The paper argues that a better future for work and workers ultimately depends on broader changes in ownership.

Keywords: automation, technological progress, work, work time, the quality of work, political economy, capitalism, post-capitalism.

Introduction

Predictions of the disappearance of work now abound in academic as well as popular discourse. Fuelled by some prominent empirical studies (Frey and Osborne, 2017; see also Acemoglu and Restrepo, 2017), such discourse highlights the continuous and exponential progress in new digital and robotic technologies and implicates the latter in the demise of work (Brynjolfsson and McAfee, 2014; Ford, 2015). It is predicted that, in the future, many (perhaps even most) work tasks will be fully automated. Large numbers of workers, it seems, will face the prospect of having to live without work.

For some writers, the possibility of work's demise evokes fear, not least because of the threat of higher unemployment and greater inequality. It is argued that society will have to adopt certain reforms to protect workers in the event of work disappearing. These reforms will extend from policies of reskilling to the provision of a basic income (Brynjolfsson and McAfee, 2014; Ford, 2015). Still others, however, welcome the prospect of a future of less work. Some radical voices, indeed, embrace mass automation as a route to a 'post-work' utopia (Mason, 2015; Srnicek and Williams, 2015). They call for a programme of 'full automation' and look forward to a time when work is abolished.

This paper offers a critical perspective on the present debate on automation and the future of work. This debate is one in which alternative perspectives from economics and political economy have collided and is of interest in revealing areas of emerging

David A. Spencer (das@lubs.leeds.ac.uk), Professor of Economics and Political Economy, Leeds University Business School, University of Leeds, Leeds, UK. David A. Spencer teaches and researches in the area of the economics and political economy of work.

consensus as well as dispute between these perspectives. It illustrates, in particular, how the idea of the loss of work has captivated the attention of writers across the intellectual and political spectrum and how this idea has fed different visions of the future in which automation serves to curtail the volume of work. Built into these visions are competing ideas on the role of work in human life and on the desirability of moving to a society where work is lessened. The paper contributes by setting out some of the main positions in the modern debate on automation and by showing weaknesses and areas for development in these positions. While the paper is ultimately sympathetic to the utopian vision of using automation to achieve less as well as better work, it makes clear the barriers to the realisation of this vision, and in turn, stresses the need for fundamental reform in society to overcome these barriers. The idea of automation alone resolving the problems of work is rejected in favour of an argument that places stress on the need for changes in ownership. The arguments and criticisms presented in the paper augment and extend those made in previous work (Spencer, 2017)—in particular, they broaden understanding of the economic and political dimensions of technological progress and of the possibilities for utilising technology for the benefit of the many, not the few.

The paper is organised as follows. Section two offers some historical background on the vision of automation as a work-reducing mechanism. Here, focus is given to the writings of Marx and Keynes as two prominent competing positions on the possibility for an automated ('workless') future. Section three discusses the progress towards achieving less work in capitalist society. This discussion helps to identify some enduring barriers to working less under capitalism. Section four draws out the areas of consensus and dispute in the modern debate on automation. It is shown how writers from different intellectual and ideological positions now agree that work is in severe jeopardy and that automation will bring about a future of less work; however, they disagree on the consequences of work's demise for workers and society. The section begins the critique of these positions for their neglect of reasons why work will persist in the future, despite and indeed because of technological progress. It is argued, in particular, that technology poses a greater threat to the quality of work than its quantity. Section five addresses and criticises some prevalent policy responses to automation, from both mainstream and radical positions. Section six reflects on the opportunities for harnessing technology to achieve a future of less and better work. Section seven concludes.

The escape from work: comparing Marx and Keynes

The notion of technology creating the conditions for the reduction of work in society has animated social and economic thought for many years (Spencer, 2009; Hermann, 2014). Writers as diverse as Marx and Keynes have looked forward to a future where machines rather than humans meet societal needs (other writers to share this vision of the future include Lafargue (1893), Russell (1932), and Gorz (1985)). Below, we set out the separate visions of Marx and Keynes. As will be argued, these visions incorporate different ideas on the status and value of work. They also point, in different ways, to the possibility for overcoming work in a post-capitalist future.

Marx stressed how capitalism set limits on technological progress. While technology was a driving force of capitalism leading to the constant expansion of production and consumption, its use was limited to the exploitation and alienation of workers. The goal of profit-making meant that technology was harnessed for the benefit of capitalist employers, not for the benefit of workers. Marx highlighted the degradation of work and workers caused by technology. Workers were not liberated by technology; rather, they were enslaved by it. Technology confronted workers as an alien and hostile force, undermining the quality of their lives inside and outside of work. The idea of workers being reduced to mere 'appendages' of machines (Marx, 1976: 799), losing their autonomy and cognitive powers, formed part of a broader critique of the use of technology under capitalism.

The achievement of shorter work time in capitalist society was not guaranteed—to the contrary, the tendency was for individual capitalist employers to push workers to work longer, even at the expense of workers' health. Rather, in Marx's view, workers had to organise collectively to secure shorter work hours. The enactment of legislation to limit work time during the nineteenth century reflected the success of workers' collective struggle and the continued reduction of work time would depend on workers maintaining and enhancing their bargaining power in capitalist society.

Yet, beyond the critique of capitalism, Marx offered a positive vision of how technology might be used differently in the future. In short, with the transition from capitalism to communism, it would be possible to use technology directly and proactively for the purpose of reducing work and extending free time. It would also be possible to turn work itself into a non-alienating, self-realising activity, by transforming the relations of production. Marx, in this case, held out the hope of technology acting to extend human freedom and well-being both within and without work (Sayers, 2005).

In a famous passage, Marx referred to the way in which communism would increase the 'realm of freedom' at the cost of the 'realm of necessity' (Marx, 1992: 959). In the latter, humans would perform the work required to meet the material needs of society. Here, Marx recognised that work would remain a necessity in a future communist society, albeit thanks to the harnessing of technology it would take up less time, leaving more free time for people to indulge their creative passions in activities of their own choosing. The pursuit of more free creative activity would be a priority under communism—it would replace the goal of creating more surplus labour time and with it more work that existed under capitalism. At the same time, however, Marx stressed that communism would allow for freedom and fulfilment in work (James, 2017). This would follow, in part, from the use of technology to lessen and eliminate drudgery. Under communism, the removal of drudge work would become a key task and would provide an important condition for the increase in the quality of work. Beyond the automation of drudgery, the social relations of work would also be transformed. With work undertaken under collective and cooperative conditions with workers able to direct and control the work they do, there would be a new creative element to work that would add to the qualitative experience of workers. Work under communism would be performed 'with the least expenditure of energy and in conditions most worthy and appropriate to their human nature' (Marx, 1992: 959). Such circumstances would enable workers to experience work as a free and fulfilling activity in the same way as the activities they pursue outside of work. Indeed, from Marx's perspective, work in a future communist society had the potential to become 'life's prime want' (Marx, 1978: 531).

Keynes (1930), writing from a very different ideological standpoint, also endorsed the reduction of work time via automation; however, he differed from Marx in the pathway to the achievement of this goal. For him, a future of less work did not require any kind of revolution in society and the move to communism; rather, it could and would be realised under capitalism. In his famous 1930 essay, *Economic Possibilities for Our Grandchildren*, Keynes set out an essentially positive vision of the future in which continuous capital accumulation would deliver a world of fewer work hours and longer hours of leisure. Keynes wanted to persuade the readers of his essay of the essential benefits of capitalism. He wanted to show them that capitalism would deliver in the end and that while the problem of 'technological unemployment' would be faced in the short-run this problem would be resolved in the longer-run. Indeed, the replacement of human labour with technology signalled the potential for a better future with a diminished burden of work and the progress of technology was to be encouraged en route to a leisure society (Skidelsky and Skidelsky, 2012: 15–16).

Keynes, writing in 1930, thought it would take 100 years to create a working week of 15 hours. By 2030, the pressing problem of society would not be one of finding work for people to do; rather, it would be one of finding ways to fill leisure time with creative pursuits. Keynes worried that the work habit was deeply ingrained in human psychology and that it would take time for workers to adapt to a situation where work

occupied only a few hours in the week. The move to a shorter work week, however, was filled with hope and promise of a better leisure-centred existence.

A shorter working week, in Keynes's view, would be realised by capitalist employers pursuing their instinct of money-making. Although Keynes saw such an instinct as distasteful and immoral, he regarded its realisation as essential in bringing forth the technology required to raise productivity. Without the pursuit of more money, society would be bereft of the means to economise on work. But Keynes felt that the desire for money would fade over time (Skidelsky and Skidelsky, 2012: 17–18). As society secured the means to work less, new higher level values would take hold and come to guide human behaviour. In the better (post-capitalist) future Keynes envisaged, society would come to value art and beauty over the striving of monetary gain and would accordingly look to spend more time in creative activities outside of work.

Keynes's vision differed from that of Marx in two key respects. Firstly, he saw the transition to a future of less work as a necessary and indeed automatic outcome of capital accumulation. *Contra* Marx, Keynes rejected the call for a move to communism and instead asked his readers to stay loyal to capitalism. That said, as mentioned above, Keynes felt that the achievement of less work would challenge capitalism and lead to the withering away of the latter. Secondly, unlike Marx, Keynes retained the idea, common in economic thought, that work was a 'disutility' (Spencer, 2014). For Keynes, the goal of automation was to negate work rather than to liberate it from its alienating form under capitalism. Keynes saw no opportunity to render work as rewarding of itself and instead presented a vision of the future where technology existed to extend the freedom of people to live without work.

The persistence of work: paradise lost?

The above two visions of Marx and Keynes have continued to inspire others to think beyond the present and to imagine a future where machines as opposed to humans do most of the work needed in society. Yet, these visions stand as utopias unrealised. In spite of continuous progress in technology, work has persisted. Capitalism has managed to create more work for people to do and has shown no signs of giving way to a system where work is negated or pursued for its own ends. While the use of technology under capitalism has certainly removed some elements of the degradation of work, it has seemingly failed to liberate workers from work. Indeed, its effect has been to sustain work, creating new sources of tension and strife for workers.

The history of capitalism shows how hours of work first rose and then fell. Working hours peaked under capitalism in the early-nineteenth century. At this time, it was not unusual for workers to work in excess 70 hours per week (Nyland, 1986; Hermann, 2014). The decline in work hours that occurred from the late-nineteenth century through to the early-twentieth century was driven in part by shifts in state policy, prompted by the successful opposition of workers. It was workers' collective struggle via unions and other cooperative organisation that secured legal and other limits on work time. Work hours have fallen since the early-twentieth century in capitalist economies although the rate of decline has tended to be somewhat slower than in previous periods and has been uneven across countries (Golden, 2009). In countries like the United States, to take one notable example, work hours have actually shown signs of increase since the 1970s, reversing the long-term trend towards shorter work hours (Friedman, 2017). The rise in female participation rates has also meant that per capita work hours have risen in many capitalist countries (Hermann, 2014). Furthermore, even for those workers who have faced reductions in work time, increases in the intensity of work—partly linked to technology—have added to the cost of work (Green, 2006).

In short, while capitalism has produced enormous increases in productivity due to technical change, not all of these increases have fed through to shorter hours of work. Quoting Maddison (2001), Hermann (2014: 49) reports that 'Between 1870 and 1998 average labour productivity (measured in GDP per hour worked) increased 15 times in

the United States and 18 times in Europe, while work hours per person in employment were cut by little more than half'. It is clear that productivity growth itself has not guaranteed falls in work time; to the contrary, longer hours of work have persisted in spite of such growth. This fact has led to grave doubt about the possibility of achieving Keynes's prediction of a 15 hour work week by 2030. Indeed, on current trends, many countries look set to have working hours per week more than double Keynes's prediction.

The seeming paradox between technical progress and slowly falling or even rising work hours can be explained by two factors. The first relates to the effects of consumerism. The effort of capitalist employers to cultivate higher demand via advertising and marketing has meant that productivity gains have been absorbed in higher consumption rather than in fewer hours of work (Hunnicut, 1988). In the post-war period, under a strong welfare state and strong unions, workers were able to secure higher wages that underpinned higher consumption. In the period since the 1970s, with the retrenchment of the welfare state and the declining power of unions, workers have faced stagnant or falling wages that has meant they have had to go into debt or secure credit to maintain or increase consumption. Here, the achievement of higher consumption has been at the expense of longer work hours. Generally, the existence and persistence of strong consumption norms, underpinned by mass advertising and marketing, has inhibited the move to shorter work hours (Cowling, 2006).

The second factor concerns the lack of bargaining power of workers. The ability of workers to secure shorter work hours has been impacted by changes in the political economy of capitalism. The post-war period offered workers some bargaining leverage to achieve shorter work hours. The fact that this power was not always translated directly into a decisive reduction in work time reflected both the impacts of consumerism that fed higher consumption and longer work hours and the motives of unions that prioritised higher wages over shorter work hours (Hunnicut, 1988). In the period since the 1970s, the decline in bargaining power of workers due to the rise of neoliberal policies and practices has arrested the trend towards shorter work hours (Hermann, 2014). Faced with an increasingly difficult and indeed hostile bargaining environment, many workers have had to settle for the same or longer work hours for the same or lower wages. Again the United States stands out as a country where work hours have increased since the early 1970s at the cost of stagnant or falling wages for workers. Within the United Kingdom, the decade since the 2007–08 crisis has also seen real wages decline, with higher employment and static hours of work (Haldane, 2015).

Keynes's mistake was to ignore both the effects of consumerism in maintaining a demand for longer work hours and the weak bargaining power of workers in preventing shorter work hours (Friedman, 2017). In the former case, he assumed falsely that consumer wants would have a natural upper limit—he failed to anticipate, in this case, how consumer wants would multiply as capitalism developed ever more sophisticated ways of stimulating consumption (Skidelsky and Skidelsky, 2012). In the latter case, he assumed that capitalist employers would pass on the proceeds of productivity growth to workers in the form of higher wages and shorter work hours—he failed to foresee how capitalist employers would use their superior power to appropriate the proceeds for themselves and deny workers both higher wages and shorter work time. This fact offers some confirmation of Marx's idea around the importance of unequal power in forestalling work time reduction under capitalism.

The fact is that while capitalism has created the potential for a reduction in work hours it has not always developed the conditions to fully realise this potential. Indeed, despite continuous gains in productivity linked to technological progress, it has created pressures that have maintained and even extended work time. At the same time, it has served to maintain and indeed grow employment, extending work to a greater share of the population. In terms of the quality of work, while capitalism has managed to automate some dirty and dangerous work (at least in Western capitalist economies) in manufacturing, it has simultaneously created more precarious, insecure and low paid work in services. Technology has not been liberating for workers in the service economy; to the contrary, it has meant for many burdensome work with few pecuniary

benefits. As we shall see below, despite this background and context, some authors are now predicting that work will disappear in the future through the pressure of automation. They foresee, in the spirit of Marx and Keynes, the move to a world with less and even zero work.

Robots on the march: less or more work?

There is now a growing belief that developments in technology will allow for a reduction in work (Brynjolfsson and McAfee, 2014; Ford, 2015). Importantly, it is predicted that technology will lead not just to erosions in work time, but also to the wholesale disappearance of many established jobs. Particular attention has been given to the progress in computing power and to associated advances in robotics and artificial intelligence. It is suggested that, in the future, the creation of 'smart' machines, from driverless cars to robots capable of thinking for themselves, will lead to the displacement of humans across myriad jobs. Human drivers, warehouse operatives, retail workers, journalists and financial traders will all face redundancy in coming years, as their skills and competences are replicated by machines. Firms will find it easier and more cost-effective to hire machines rather than humans and the prospect of extended automation will bring about a shrinkage in available work opportunities.

Some authors predict that close to a half of existing jobs in the United States will be automated in the next 20 years (Frey and Osborne, 2017). Estimates for the United Kingdom suggest that 15 million jobs are at risk of automation—this approximates to half of the current workforce (Haldane, 2015). In developing countries, the estimates of potential job losses are in even higher—for example, more than two-thirds of jobs in India and over three-quarters of jobs in China are seen to be vulnerable to automation (Frey and Osborne, 2015). Around the world, many millions of workers are seen to face the prospect of mass redundancy and a future without work.

The above prospect has raised obvious concerns over the potential for rising unemployment along with higher inequality. If, in the future, workers cannot rely on work for income and have no other means of supporting themselves, then they will face economic destitution. Higher inequality will stem from a situation where the returns from automation flow to a minority in society. The owners of robots thus stand to gain enormously, though at the expense of the rest of society, who are likely to suffer economic hardship through lack of access to income. These concerns have led to different policy recommendations, from investments in education and training that enable workers to keep pace with the latest developments in technology to a basic income that supports workers left behind by automation (Brynjolfsson and McAfee, 2014; Ford, 2015).

Some writers, however, have reacted to the prospect of work's decline in a positive way. While recognising the upheaval caused by automation, they see in the latter the opportunity to escape the burden of work. Srnicek and Williams (2015), to take one notable example, welcome the automation of work and look forward to a future where humanity is liberated from work. They accept predictions of the disappearance of work and indeed argue for a policy of 'full automation' to bring forward the end of work. Mason (2015) echoes this view, seeing in technological progress the potential for a 'post-capitalist' future in which work is terminated.

The above contributions illustrate the areas of consensus in the modern debate on automation. There is an acceptance in both mainstream and radical positions that work is set to disappear and that society must respond to the latter outcome. Where positions differ is over the consequences of automation. Perspectives such as those of Brynjolfsson and McAfee and Ford voice concern at the costs of automation (measured by higher unemployment and rising inequality) and endorse policies to prevent a future techno-dystopia. More radical perspectives linked to the work of Srnicek and Williams and Mason, by contrast, focus more on the benefits of automation (for the negation of drudgery and the extension of human freedom) and highlight ways to create a future techno-utopia wherein work is overcome and ultimately abolished.

The above areas of consensus, however, can be criticised. Firstly, it can be argued that far from reducing work technology is likely, as in the past, to augment it. Here, the writings of Huws (2014) are instructive in demonstrating how technology can be, and is, work-augmenting. Huws has highlighted the myriad jobs linked to new technology, from the mining of raw materials that go into their production, through the sales functions in their consumption, to the task of disposing of them when they are no longer required. The manufacture, sale and disposal of technologies such as iPhones can be connected to vast value chains that support many millions of jobs (and workers) across different countries and sectors. The use of technology, too, can become a catalyst for more work by creating new opportunities for commodification. Think of the marketing opportunities opened up by the Internet that enable firms to sell more output, thereby supporting more employment. Think, too, of the invisible and often unremunerated work involved in the upkeep of the Internet. Huw's point is that those predicting the demise of work through automation miss the way in which technology can enlarge work and keep people working and spending in the same ways as the present.

A second criticism relates to the capacity of capitalism to reproduce and indeed extend work, albeit often on inferior terms and conditions for workers. Here, we can refer back to the earlier discussion of consumerism and workers' weak bargaining power as constraints on working less. As suggested above, the dynamic under capitalism is to keep workers working and consuming because this suits the imperatives of profit-making. The use of technology to extend marketing opportunities fits with the idea of maintaining work and consumption. But there is also the idea of technology being used and manipulated to secure new ways of working that lower costs for capital. The search for means to squeeze costs leads to the automation of functions and the displacement of labour, but it also creates new work in its wake partly by increasing the incentive to hire labour. To the extent that technology widens the pool of available labour by creating more undifferentiated forms of work, it places downward pressure on wages in ways that make it more attractive for capitalist employers to keep hiring labour. Indeed, the reduction of wages may thwart investment in technology where it is deemed non-economical to do so. Think, for example, of hand car washes in the United Kingdom and food picking in other countries—old ways of working that could be automated but which persist because there is cheap labour available for capital to hire. If workers' bargaining power is already low due to the decline in unions and a more hostile, 'business-friendly' policy environment, then their power is likely to fall even further with the processes of automation. Yet here workers will face not unemployment but rather more and worse quality work. One could imagine a future where low wage and low productivity work—from cleaning and cooking to babysitting and dog-walking—proliferates. In this case, workers will keep being hired but in jobs that have scarcely any intrinsic value.

Technology itself is already being used to expand work opportunities in a way that is detrimental to the interests of workers. Take modern employment platforms such as Amazon's Mechanical Turk and TaskRabbit. These platforms, enabled by technology, have permitted capitalist employers to outsource work at lower cost than if they undertook it internally. Work has been created that bypasses existing labour laws and social protections. Capitalist employers, by hiring at a distance and without any formal employment contract, have tended to overlook their moral responsibilities towards workers. A corollary is that employment platforms have been criticised for creating more low paid, unregulated and insecure work (Bergvall-Kåreborn and Howcroft, 2014). The prospect of their growth in the future promises to further erode the quality of work open to workers.

The rise of firms like Uber and Deliveroo as part of the so-called 'gig' economy is yet another example of how the latest technology has been combined with inferior labour market practices. The use of technology to create a disposable workforce with fewer labour entitlements has benefited those owning the above companies at the expense of those who they hire. In particular, it has meant for workers extended hours of work without the benefit of sick pay, holiday pay and minimum wages. While trumpeted as

offering 'flexibility' to workers, work in the 'gig' economy has become a means to erode and undermine the hard-won rights of workers.

Furthermore, technology has also been used within workplaces to tighten up monitoring and intensify work. In work, workers now face having their actions recorded and assessed by technology on a moment-by-moment basis. They also face monitoring and work outside of normal hours through the use of email and forms of digital scheduling that require workers to be 'on call' around the clock (Luce, 2015). Critics point to the creation of a new form of 'digital Taylorism' (Schumpeter, 2015) with workers subject to a more intrusive and intensive work environment. With more sophisticated surveillance technology set to be developed that can be worn by and even implanted into workers, there will be likely even greater scope in the future to monitor and intensify work. The fear, in this case, is less about robots replacing work and more about work being turned into a robot-like experience with ever more burdensome qualities.

In summary, a problem with predictions of work's demise, from both mainstream and radical perspectives, is that they fail to see how the growth of work and the progress of technology can go hand-in-hand. They miss, in other words, the scope for capitalism to reproduce work and prevent the move to a future of less work. The other problem is that they ignore or understate the threat to the quality of work posed by technology and the capacity for low-quality work to persist and even multiply alongside technological progress. The rhetoric of the 'rise of the robots' in this respect can become a distraction from other pressing problems created by technology as it evolves within capitalist society. We turn to issues of policy and reform—specifically on how technology might be harnessed to achieve less and better work—in the next two sections.

Responses to automation: saving or negating work?

Extant policy responses to automation draw inspiration from different views on the nature and role of work and on the benefit or otherwise of creating conditions that allow work to continue in society. Below we highlight two broad positions in the literature. Both, it will be argued, present problems. The latter extend beyond the prediction of work's demise and raise more fundamental questions about how technology should be managed in relation to the quantity and quality of work.

The first position suggests reasons why work should be maintained even in the context of pressures tending towards its demise. One version of this position sees work as intrinsically a 'good thing'—the performance of work is seen as essential for human well-being, beyond the receipt of wages. Brynjolfsson and McAfee (2014: 213) represent this view. They refer to work itself as 'beneficial' and call for policies to save work from automation. This is on the basis that human life is enriched by work and that the disappearance of work would lead to an existential crisis in society. A variation on this view sees work as important in sustaining consumption (Ford, 2015: 191). This variant supports work to reproduce consumer spending and to avert a crisis of underconsumption. The disruptive effects of automation, more directly, are to be countered via the provision of a basic income that supports workers financially in a world where work is set to become much scarcer (Ford, 2015: 256).

A second position takes the opposite view that work is a regressive influence on human well-being. The obsession with work as a direct source of well-being is seen as dangerous in promoting a life where creative activities outside of work are undervalued or denied. The slavish devotion to work misses how a life well lived entails freedom from work and the abundance of free time (Srnicek and Williams, 2015: 126: see also Weeks, 2011). This view encourages automation as a way to negate (or 'abolish') work via the freeing up of time for creative activities beyond work.

Both of the above two positions can be challenged. The first misses the costs of work, including those linked to the use of technology. It fails to see the value of reducing work time where this adds to the freedom of workers and of taking steps to progress the

quality of work. The sense of all work being 'good', indeed, distracts from the case for achieving less and better work by justifying the creation of any kind of work, regardless of its costs to workers. The view that work must be supplemented by a basic income to prevent a reduction in aggregate demand leads to an acceptance of the system of work as it exists. A basic income, in effect, becomes a prop to consumption and a means to support work—in this sense, it offers no radical break with the present, but rather consigns workers to the same work-consumption cycle. Ford (2015: 265–66), who advocates a basic income, is clear that the latter is designed to support growth and that it has no wider purpose in reforming capitalism itself. Any radical vision like that of Keynes of moving beyond growth and indeed capitalism, in this case, is extinguished.

The second position outlined above (i.e. the one stressing the benefit of negating work) can be seen to neglect the need and possibility for progress in the quality of work. The economisation of work as a longer-term goal is laudable and in need of promotion (see below). But there is also a task in the present to support measures to raise the quality of work if only because work is going to persist into the future. Post- (or 'anti'-) work positions take for granted the disappearance of work and tend to understate the case for change in contemporary workplaces—for example, the need for stronger unions and labour laws—that support workers in achieving better outcomes in work. Such change can be seen as particularly important given the tendency, as described above, for technology to impair and undermine the quality of work.

A further issue can be highlighted. This relates to the idea of using technology not just to shorten work time, but also to enhance the qualitative content of work itself. As mentioned above, Marx's vision of a better future to come entailed the restoration of work as a non-alienating activity and the realisation of the latter was seen to depend in part on the use of technology. It can be argued that some modern post- (or 'anti'-) work perspectives obscure how work can be turned into a positive and fulfilling activity and how a radical vision of an automated future can include the achievement of both more free time and higher-quality work.

Reimagining the future of work: restating the case for less and better work

Two reflections can be made based on the above discussion. One is the need to tackle problems of work in the present. These problems include those of low pay, work-related insecurity, long hours of work (the rise of 'out of hours' working is an issue here), lack of autonomy linked to greater monitoring, and physical and mental ill-health associated with the stresses and strains of work life. It is clear, as argued above, that technology is adding to the aforementioned problems not diminishing them and there is a case for new regulations to support workers' rights and interests at work. One area for policy intervention concerns the status of the self-employed in companies such as Uber. Extending to these individuals the same rights and protections as regular workers would be a positive move and if combined with the strengthening of unions would help to elevate the material conditions of those employed in the 'gig' economy (Friedman, 2014). Beyond such intervention, there remains a strong case for cutting work hours on well-being, environmental and economic grounds and this case stands independently of the possibilities afforded by automation (Coote *et al.*, 2010).

The second reflection concerns the future of work and the role of automation within it. The position taken here is that automation ought to be a means to reduce work in society—in particular, it should be harnessed in ways that allow for work time to be reduced and for work to be more evenly distributed across the population. In this latter respect, it would help to overcome the present anomaly of overwork for some and unemployment for others. Sharing out work more evenly across the available population by reducing average working time would enable those who work too much to work less and those who do not work at all to partake in some work. In addition, automation should also enable people to experience work as a source of fulfilment. By reducing drudgery and extending opportunities for creative activities in work, automation

should add to the quality of work. The capacity for technology to lessen work as well as improve its quality, however, can be seen to depend on challenging prevailing relations of ownership—indeed, it can be seen to require the democratisation of production and the move to a system of shared or collective ownership. Such conditions would enable the redistribution of income to support workers in a workless future and would provide the basis for the creation of forms of work organisation that enable workers to work in ways that advance their well-being.

The above position contrasts sharply with the stance taken by writers such as Brynjolfsson and McAfee (2014) and Ford (2015). The latter eschew issues of ownership and instead propose policies that maintain the status quo. Their focus on ‘saving’ work—either for its own sake or as a means to support consumption—comes at the expense of reforms designed to extend free time. They also neglect the limits to the use of technology for progressive ends that stem from capitalist ownership. The way in which capitalist employers can resist the use of technology for the purposes of reducing work time and how the weak bargaining power of workers can thwart a more equitable distribution of the rewards from technology—including in the form of shorter work hours—are ignored.

Srnicek and Williams (2015) urge reforms that move beyond capitalism, but they are hindered by a form of argumentation that sees work as essentially hostile to well-being (see also Weeks, 2011). Their position is similar to that of Keynes and other mainstream economists in that they paint work as an activity to be avoided and indeed eliminated. Inadvertently, in this sense, they obscure the link between the costs of work and the form of work evident under capitalism. By extension, they miss the scope for overcoming these costs by changing the way in which production is organised and controlled. The stress on the ‘abolition’ of work, in short, inhibits the articulation of the case for better work.

The above argument is not an attempt to ‘glorify’ work (Srnicek and Williams, 2015: 126), but rather to recognise the possibility for combatting the alienation of work via changes in ownership. It is a matter of developing the argument made by Srnicek and Williams (2015: 146–48) about ‘repurposing’ technology—that is, it is about creating conditions wherein technology reflects and represents the interests of workers. With technology under democratic control, it is possible to move towards a position where work is liberated in the same way as leisure and where the scope for fulfilling activity is realised at work as well as outside it.

An essential point to make is that technology is not some neutral force operating in a remorseless and inexorable fashion. Rather, it is shaped by the politics of production and the forms it takes—and its capacity to improve the lives of people within and without work—depends on the ownership relations in which it is located. Under capitalism, the unequal ownership of production hems in technology and limits its use both for reducing work time and for elevating the quality of work. It can be argued in this case that if society is to harness technology for the benefit of less and better work, it must embrace democracy at work and extend to workers ownership rights over production. Enhancing the voice and power of workers would help to ensure that technology is harnessed for humane goals, rather than squandered on endless consumerism and production that benefits the owners of capital at the expense of the rest of society. The idea of creating new forms of work organisation where workers have a democratic say over the use and allocation of the benefits of technology, in short, should be used to motivate a policy and political agenda for positive social change.

Conclusion

There is now renewed interest in the topic of automation. The advance in new digital and robotic technologies, it is claimed, will bring forth a future of less work. While history has disproved predictions of work’s demise via automation, it is now argued that this time will be different and the days of work are numbered. Notably, writers from across the intellectual and political spectrum have seized on the prospect for the disappearance of work. Some worry about the negative effects on unemployment and

inequality, while other more radical voices see the opportunity for a move beyond work and the creation of a world of abundant free time. In both instances, however, there is confidence that work will decline in the future.

This paper has addressed concerns around the automation of work. It began by showing how the idea of the escape from work via automation has endured in economic and social thought. Marx and Keynes, as demonstrated above, stand out as two prominent advocates of the reduction of work time through the harnessing of technology. Yet, the vision of releasing mankind from work has not been fully realised. While average work hours have fallen in capitalist economies, they have not fallen by as much as productivity growth. More broadly, work has continued to dominate human life, despite rapid progress in technology.

The paper has shown how the same barriers to working less are likely to remain in the future, undermining predictions of the demise of work. Indeed, developments in technology are very likely to create more work for people to do. This reflects on the capacity of capitalism to use technology in ways that sustain and multiply work. While technology evolves under capitalist social relations, there will be a tendency for it to keep workers in work and to deny the extension of free time.

It has been argued that the concern with technology is less with its impact on the volume of work and more with its effects on the quality of work. The latest digital technologies are already being used to create a more disposable, insecure and exploited workforce. Their extended use in the future threatens to subject more workers to even worse quality work.

The problem is not technology itself, but rather the harnessing of it under capitalism. The bias towards the use of technology for profit-making, specifically, means that workers cannot rely on technology to reduce the burden of work and to enhance the qualitative content of work. Rather their only hope for securing less and better work is to see technology pass from the direct control of capitalist employers. As stressed above, and in line with arguments made by Marx, the quest for a more humane work environment—one that supports extended free time while encouraging more intrinsically rewarding work—requires changes in ownership that cede power to workers over the use of technology. It is not utopian to imagine an automated future where work is diminished and also enhanced in qualitative terms; however, to realise this future, society must undergo radical change—in particular, it must accommodate a shift towards worker ownership.

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