

Hidden In Plain Sight: The Ghost in the Automation and Future of Work Debate



by Professor Leslie Willcocks

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"Far from taking over, automation will most likely help us cope with the dramatic and under-researched intensification in the pace of work."



**LSE Business
Review**

Introduction

Looking at the big picture it is not easy to pick your way through the media representations of the debate around automation, robots and the future of work. Sources and multiple studies are, in fact, very variable in quality, evidence and rigour. Nevertheless, media narratives seem to polarise around two storylines—hype or fear. ‘Hype’ tells us that it is largely going to be fine and most of us are going to live in a well-run technologised world—‘Automotopia’—with more than enough goods, services, and leisure. Meanwhile the other ‘Fear’ vision is essentially dystopian. This polarised narrative—let’s call it ‘Automageddon’—also assumes quick and pervasive adoption of the technology, but sees it as displacing a huge number of physical and cognitive-based jobs across industries, geographies and at most levels in the organisation.

Unsurprisingly, artificial intelligence (AI) as job killer has been the focus of disproportionate media attention. It is a story too good to be false. Unfortunately, an anchor study by Frey and Osborne (2013) is still used to support this narrative, with the often-quoted headline figure of 47% of USA jobs highly automatable. However, the researchers do not try to specify the speed of technology development, nor a time period for the loss of jobs—*“some unspecified number of years, perhaps a decade or two”*—they say. Nor do they attempt to predict the number of jobs lost, or jobs created through automation. The study also does not look at the key bottleneck of how commercially feasible, viable and organisationally adoptable the emerging technologies are, i.e., the long road to diffusion of innovation dilemma is ignored. These self-confessed omissions are all but factored out in media representations of the findings.

Net Job Loss Decreases, Then Almost Vanishes....

The media have also been slow to pick up on later studies richer in data, and more fine-tuned in their analysis. For example, Forester Research (2017) suggested robots would take 24.7 million jobs, but create 14.9 million new jobs by 2027, leading to a net loss of 9.8 million jobs—about 7% of the US workforce. An OECD study by Arntz, Gregory and Zierahn (2016) suggested that 9% of US individuals faced high job automatability, and, on average, 9% of OECD jobs (UK 10%) would become highly automated within a decade.

By 2019, however, the picture of high job loss had changed dramatically, though not necessarily in the headlines. The World Economic Forum (2018), for 2018-2022, found automation replacing 0.98 million jobs while creating 1.74 million new ones. The Asia Development Bank (2018) also came out as positive on net job creation from automation. Price Waterhouse Coopers (2018) estimated that the net job effect of automation in the UK from 2017-2037 would be a slight gain of 168,000 jobs (7.176 million created, 7.008 million displaced). MGI (2018) suggests that: *“overall, the adoption of AI may not have a significant impact on net employment in the long term.... Our average global scenario suggests that total full time equivalent employment may remain flat at best compared with today.”*

What is startling here is that as time has gone by, the estimates for net job loss from automation have been disappearing to the point of being negligible—though of course, the net figures mask considerable disruption and skills shifts. There have to be serious qualifications to the Robo-Apocalypse and job loss narrative.

Assumptions and The ‘Ghost’ Factor

As recent studies, and our own work, show, many assumptions imbedded in the Automageddon narrative are highly questionable: that automation creates few jobs short or long term; that whole jobs can be automated; that the technology is perfectible; that organisations can seamlessly and quickly deploy AI; that humans are machines that can be replicated; that it is politically, socially and economically feasible to apply these technologies. Then there are the macro factors. With ageing populations, productivity gaps and skills shortages predicted across many G20 countries, the danger might be too little, rather than too much labour. Ironically, far from taking over, automation will be, most likely, just helping us to cope.

But our LSE research, looking at hundreds of ‘AI’ deployments, reinforces immensely this contention by identifying a critical factor neglected by all previous studies. Despite assumptions, and hidden in plain sight, the amount of work to be done is not remaining stable; it is growing across sectors, year on year, dramatically, and inexorably. Work intensification would seem to have been increasing, especially since the financial crisis of 2008. Organisations have sought to increase productivity and the amount of work done by ‘sweating the assets’ and attempting to do more with less using the same labour base, and partly through applying digital technologies. This phenomenon is very under-researched. However, some studies are indicative.

Thus Felstead, Gallie et al. (2013) found that the percentage of UK jobs needing hard work moved from 31.5% in 1992 to 45.3% in 2012. Since 2006 both the speed of work has quickened and the pressures of working to tight deadlines have also risen to record highs. Korunka and Kubicek (2017) collect a range of research papers recording work intensification over the last ten years across several economies. In our own research we very frequently found that, apart from the many other benefits, a major reason for automation was a range of stakeholders experiencing a rising tide of work to be done (Lacity and Willcocks, 2018; Willcocks, Lacity and Gozman, 2019). The limits to working smarter, and of high-performance practices, were being tested—with the practices often found wanting. ServiceNow’s 2017 multi-country survey found 70% of some 1,874 corporate respondents registering that the pace of work grew by at least 10% in 2016; nearly half said it grew by 20% or more. It found that, by 2018, 46% of companies were going to need greater automation to handle the volume of tasks being generated. By 2020, without more automation, 86% of organisations believed they would reach their break point when dealing with the volume of work would no longer be sustainable.

But where is this dramatic increase in the amount of work coming from? Almost all studies to date routinely leave out three key factors.

The Exponential Data Explosion

ServiceNow (2017) found, for example, that nearly 80% of respondents reported that data from mobile devices and the Internet of Things was accelerating the pace of work. Some estimates suggest that 90% of the world’s digital data that we try to process, was created in the last two years, and that the amount of digital data grows by 50% a year. Ganz, Reinzel et al. (2017) estimated that by 2025 there would be ten times the data generated in 2016. Even if these are only ball park figures, they still raise the fundamental question: how are we going to collect, store, process, analyse, and use data arriving in such colossal volumes? It implies a massive explosion of work especially as data seems to create more data. Maybe we really do need more automation just to cope?

Expansion of Audit, Regulation and Bureaucracy

In the automation and future of work studies, the other largely unheralded source of work growth is the cross-sectoral explosion of audit, regulation and bureaucracy, amplified by the data explosion and the application of modern information and communication technologies. We have been creating, we would argue, a veritable witches brew of data, technology and bureaucracy. Graeber (2015, 2018) is one of the few to pinpoint the importance of this development for the future of both work, and the capitalist system itself. But even he probably understates the degree to which audit and regulation inevitably accompany high levels of distrust, the likelihood of market failure and increased demands for transparency. Such work may not be seen as particularly productive, but it is dramatically increasing across government agencies, business sectors and economies almost everywhere.

Technology: Both Solution and Problem

A third source of more work is technology's double-edged capacity to provide solutions that also create additional problems. If you create more data, that then raises the problem of how to process, store, analyse and then use it. What about unanticipated work making consequences? For example, the Internet has created cybersecurity issues. The cost of cyber attacks was estimated at US\$445 billion in 2013 and continued to rise dramatically to beyond US\$600 billion into 2018. This has led to further technology solutions, of course—with the cybersecurity market being US\$75 billion in 2015 and also growing much faster since then to reach potentially US\$170 billion by 2020. As another example, concerns about fake news through social media has, by 2019, led to Facebook employing fact checkers in 20 countries.

There is increasing evidence for the addictive properties of mobile devices, games, the Internet, email and related technologies and applications (see for example Alter, 2017; Aiken, 2016). Much has been made of the productivity enhancing potential of these and 'AI' technologies. But such technologies are often deliberately designed to support multitasking and constant interruption at considerable cost to real productivity at work. The emerging evidence is that task switching, being constantly interrupted and multi-tasking result in substantial performance costs. For peak performance, the goal should be sustained, focused and singular attention. But the modern worker is all too easily distracted from task performance by irrelevant information and suffers interruption by attempting to pursue simultaneous multiple goals, aided and abetted by technologies such as email, social media, the internet and mobile devices. These distractions and interruptions can come from outside or be self-generated.

Modern technologies also allow a worker to easily elide work and non-work, while ostensibly at work. Some indicative examples: A CareerBuilder survey found the smartphone, Internet, social media and email amongst the five most cited workplace disrupters and productivity killers. A 2018 Udemy survey found a third of Generation Z employees admitting to using their smartphones for personal activities up to 2 hours in the work day. Alter (2017) cites studies showing that 70% of office emails are read within six seconds of arriving. This is hugely disruptive; on one estimate it can take up to 25 minutes to become re-immersed in an interrupted task. Gazzaley and Rosen (2016) found that multi-tasking and task switching incur notable performance costs in disengaging from a task, focusing on the new task, then disengaging and re-entering the original work. A pre-smartphone study they cite found that when office workers are interrupted as often as eleven times an hour, it cost the USA \$558 billion a year in lost productivity. Wajcman and Rose (2011) found workers spending only half their day on actual 'work episodes' with two thirds of interruptions self-generated and most involving a mediated communication through a technological device. Meanwhile most workers have access to email and other communications networks, and about 45% of the world's population own a mobile phone (Gazzaley and Rosen, 2016).

In these ways more technology is undoubtedly having complex, even contradictory effects, including a significant, if largely un-researched, adverse impact on productivity and on the time required to accomplish work tasks. While more technology is the frequently touted answer to personal, social and business problems, we can find ourselves on an endless treadmill of technological solutions and the new problems they also generate.

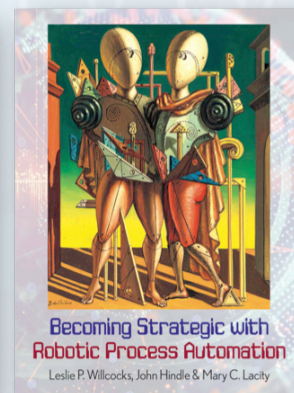
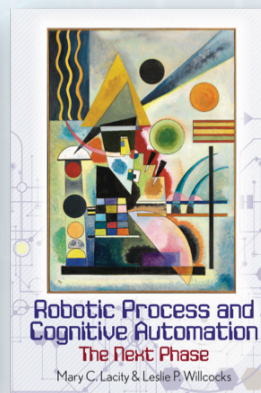
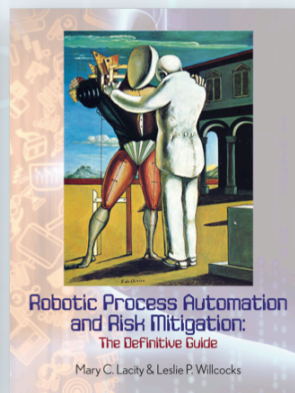
Conclusion

Automageddon from net job loss emerges as unlikely. The much bigger story line is of skills disruption and change from automation over the next 12, and possibly 20, years. Globally, hundreds of millions of workers will need to change occupations, and/or need new mixes of skills, including new skills, to operate in future workplaces. Whether this is a likely cancelled or postponed automageddon will depend on choices—on training, financial support, education, speed of automation, what the tools are designed for, for example. Moreover, these choices will be made by governments, non-government agencies, corporates and individuals, in the face of multiple factors and dynamic business, social, political and economic contexts.

The dramatic increase in the amount of work to be done is one of the least weighed factors in the automation and future of work debate. In our view, it may well be one of the more impactful. Consider how many organisations are self-reportedly at breaking point despite work intensification, working smarter, and the application of digital technologies to date. Then reflect on how the exponential data explosion, the rise in audit, regulation and bureaucracy and the complex, unanticipated impacts of new technologies are already interacting, and increasing the amount of work to be done, and the time it takes to get round to doing productive work. Far from the headlines, a huge, if under-analysed, work creation scheme may well be underway, to which automation will only be a part solution.

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