

Automation and ‘the disappearance of jobs’: what should the left propose?

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‘The jobs armagedon’

There is a good deal of discussion in the media of the impact over the next few decades of computer-based mechanisation or automation of waged work. This is seen by some as a threat, through creating large scale unemployment, by others as leading to a society of leisure in which robots and other machines ‘do all the work’. Predictions are made of huge losses of jobs in all areas of waged production, citing existing practice or, more speculatively, possible applications of existing types of computer-guided machine. In manufacturing and agriculture, automated processing and computer-controlled machine tools, sometimes wielded by robots, have been around for some time. In warehousing, robots are currently taking over the selection, transport and dispatch of goods. In transport, there is the possibility of driverless trains, goods vehicles and taxis. Consumer services, from relatively low-skilled jobs such as in call centres to high skilled professional jobs such as health diagnosis and prescription, may be replaced by expert systems using voice recognition. Even design jobs, from architecture to fashion to music-composition, may extend computer-aided design to automatic design. Rather more speculative is the prospect of robots taking over the jobs which work directly with the bodies and minds of clients – teachers and trainers, nurses, care of the disabled and older people. [note 1]

Given the startling ability of these technologies to remove jobs in the fields where they are applied, it is not surprising that work analysts have jumped in to make scary predictions about the likely loss of jobs in the next decade or two. A PricewaterhouseCooper report in 2017 said that more than 10 million jobs in Britain (32% of the total) could be at risk of replacement in the next 15 years. A 2017 report from the Oxford Martin School claimed that 80% of transport, warehousing and logistics jobs could be automated. Moreover, it is mainly lower skilled jobs which are predicted to be lost, since the higher the skill and experience of the worker the harder it is to replicate their work automatically. The predictions then point to an economy of predominantly skilled work in designing, making, installing, monitoring and repairing computers and computer-guided machines, alongside millions of unemployed people whose lower skilled jobs have been abolished. In Britain this evolution would likely exacerbate existing regional economic differences, with displacement of jobs concentrated in the poorer regions and the new jobs centred in London and the south of England and a handful of large cities.

Note in passing that the impact of the new technologies on the number of jobs is not their only problematic impact. For the user of a service, where interaction with a website replaces interaction with a person (a GP or a teacher, for example), the quality of the information provided is likely to be lower and to take less account of the particular needs and feelings of the user. This is even more the case where a carer is replaced by a robot, where the empathy of the carer and the emotional relationship of the user to her – essential, intrinsic qualities of

the service - are entirely removed. The question of service quality, however, deserves a separate discussion.

Many on the left have taken these predictions to be well founded. Some have proposed solutions which take mass unemployment as a given. A very popular strategy is a comprehensive Universal Basic Income, where the state pays everyone, whatever their employment status, the same cash benefit (and simultaneously axes all other state benefits). People of working age but without a job could then survive without having to look for work, albeit probably at a basic subsistence level. Another popular strategy, often parallel to the UBI, is to foster a massive expansion of the social economy, also known as community enterprise or the Third Sector. Based in not-for-profit enterprises, this involves a mixture of (low) paid and 'voluntary' work, and a mixture of commodity production and contracting to the state. Those displaced by automation could then undertake collective work, albeit for low or no wages, and provide useful services and goods. My view of these strategies is that the UBI and a massively expanded social economy are not feasible, and, to the extent that they are implemented, have strongly regressive aspects (I will return to this in future blogs; on the social economy, see Eisenschitz and Gough, 2011). But my main problem with them in this context is that they take mass unemployment caused by new production technologies as given, an assumption I contest in the next section. Even in their most optimistic versions, they leave a huge difference in income with the formally-employed workforce. A final problem is that they do not consider strategies through which automation could actually *benefit* the majority of the population, while ensuring wage jobs for all that want them, which I discuss in the third and fourth section of this blog. These, however, involve confronting the dynamics of capitalism; the proponents of UBI and the social economy, in contrast, seek to skirt round capitalism.

Predicting the jobs impact of capitalism's use of the new technologies

The prediction that new technologies in production will of itself produce mass unemployment rests on analysing particular sectors – those in which the technologies will be directly applied – and neglects analysis of the economy as a whole (sometimes called the 'macro-economy'). Trends in particular sectors such as warehousing and retail are analysed, but the capitalist dynamics of the whole economy are neglected. An initial suggestion of this problem can be seen if we examine the study mentioned above which predicts a loss of 10 million jobs in Britain over 15 years. Since the existing total of waged jobs in Britain is around 32 million, this implies a 2.0% per year loss of jobs due to the application of advanced computing to production. To put this another way, the productivity of labour – volume of output per worker hour – averaged across the whole economy will increase by 2.0% per year. By historical standards this is modest. Since the onset of the global economic slowdown in the 1970s, labour productivity has increased at 2 – 3% per year in most of the rich capitalist countries. In the boom of the 1950s and 1960s, labour productivity increased by 3-4% a year even in undynamic countries like Britain. Shedding of jobs may also take place in the next 15 years from causes other than advanced computing, for example other types of technical

innovation or intensification of work. But we can conclude that the predicted loss of jobs from advanced computing is not qualitatively different from previous periods of capitalism.

So what has been the impact on jobs and unemployment of these increases in labour productivity in the past? The period since the 1970s has seen high levels of unemployment in the rich countries, while during the boom those countries had very low levels of unemployment (and consequently encouraged immigration to meet labour shortages). This indicates that the correlation between strong productivity growth and high unemployment assumed by many commentators is the opposite of the case: high productivity growth in the boom was associated with low unemployment, whereas low productivity growth in the subsequent period of stagnation has been associated with high unemployment.

How can we understand this apparently paradoxical pattern? The key can be found in a central proposition of Marxist economics: that high rates of capitalist investment are a result of high rates of profit on capital. The profit rates provide both the means (money capital) and the incentive (prospective future profit) for investment (see for example Roberts, 2017: Chapter 2). At the beginning of the postwar boom, profit rates were high, leading to a high rate of investment (for a detailed account of this period see Armstrong, Glyn and Harrison, 1991). This investment was partly directly at increasing labour productivity and product quality in existing industries ('intensive investment'), tending to maintain rates of profit in those sectors as well as cheapening consumer goods; and partly to additions to capacity ('extensive investment') in existing and new sectors. Rapid intensive investment accounted for the rapid increase in labour productivity during the boom. Strong extensive investment accounted for an increase in jobs, employing people laid off by productivity improvements, and consequent low unemployment. Some extensive investment was in new manufactured products such as TVs and white goods. More was in labour intensive sectors such as consumer services (largely private firms) and public services (largely state run). So increases in labour productivity do not inevitably lead to high unemployment. The key theoretical conclusion here is that jobs and unemployment are not the (unmediated) result of technological change but rather of the rate of profit on capital, the key determinant of investment.

Jobs and automation under neoliberalism

What are the implications of this theoretical discussion of the relation between jobs and automation under capitalism for the present day? A very useful guide here is Michael Roberts's *The Great Depression* (2016) (hereafter TGD). The rate of profit is again the key. Since the 1970s the global economy has, with important ups and downs, had a much lower average rate of profit than in the previous boom. In the largest capitalist economies in the boom, the rate of profit for industrial and commercial capital was between 19 and 24%, whereas since 1974 it has been between 11 and 14% (TGD: Figure 4.1). Since the 1980s corporations have borrowed massively (TGD: Figure 6.7). But this has not led to a high rate of productive investment; instead, corporations have used part of their cash for speculation, buying of assets, and buying their own shares to boost their share price, while hoarding the

rest; the cash reserves of the corporations have accordingly increased massively (TGD: Figure 6.6). This trend has been particularly pronounced in the US and Britain. Corporations have been reluctant to invest productively because the *prospective* rate of profit is low. The low rate of productive investment has then led to low rates of productivity growth (again, very pronounced in Britain). This low profitability – low productive investment pattern has deepened since the 2007-8 ‘financial’ crash, which caused a sharp recession in 2008-9, and since then a depression, in the sense that growth of output has been slower than the average for the previous decades (TGD: Chapter 5). The profit rate plunged again during the recession (TGD: Figure 4.1), and since then the rate of productive investment and productivity growth has been low. Again, this pattern has been especially clear in Britain: productivity growth in 2017 was around 2% per year.

The last decade or so therefore gives no hint of the massive productivity rises which the new technologies of production are said to enable. But what of the future? Let us assume, for the moment, that the neoliberal political-economy of the last 50 years continues into the future.

A first implication concerns sectors experiencing advanced automation. The low rate of productive investment associated with the low rate of profit means that firms may not mechanise their operations as fast as is technically possible; rather, they may continue to use lower skilled labour at low rates of pay, flexible hours, and high work intensity. This is particularly in countries such as the US and Britain where a massive low pay, low security workforce has been created over the last decades. Nevertheless, over the next 20 years there is likely to be substantial expulsion of labour by advanced computing from the sectors already identified.

To what extent will other sectors expand their employment? There will be growth of jobs in the design, manufacturing and installation of the new production technologies; the manufacturing jobs are likely to be mainly located in East Asia. There will be expansion of manufacturing jobs in other new or emerging products, including electronic infrastructures, but again these are likely to be mainly in East Asia. Unlike the boom, consumer services will not provide large job growth, partly because they will be subject to the new technologies and partly because incomes are likely to continue their 50-year stagnation.

The building industry might be promising for job growth, given that productivity in the construction labour process is hard to increase with the new advances in computing. House building is strongly dependent on particular social and political arrangements in each country; in Britain the very low rate of house building will continue (on our assumption of a continuing neoliberal regime). Commercial buildings and privately-constructed physical infrastructures such as airports are likely to remain capital’s favourite form of productive investment, but also to continue to be subject to massive booms and recessions, so jobs are insecure. We will not, then, see an expansion of permanent construction jobs. This leaves public services and state building of physical infrastructures. But under neoliberalism, state spending on public services, and to a lesser extent on physical infrastructures, is being cut, so these are unlikely to be a growth sectors for jobs.

The prognosis for jobs in the rich countries *assuming the continuation of neoliberalism* is therefore not good. The prediction by mainstream writers on automation of a massive rise in unemployment in the next decades is therefore probably exaggerated, but *as a pattern* may be partly fulfilled. However, the discussion of this section shows that one cannot say anything useful about employment and unemployment in the future without examining patterns of profitability and capital accumulation overall and in different sectors, and associated fiscal policies affecting public spending. In other words, purely technological analyses which ignore political economy are of no use in predicting future employment.

Jobs and automation with a social-democratic government

One can see this point in another way by looking at political-economic strategies of capital and governments. In a few European countries in recent years, social democratic strategy for government, and for business itself, has been put forward as an alternative to neoliberalism. Notable examples are the British Labour Party since Corbyn won the leadership, Podemos in Spain, and the Socialist Party and Mellenchon's movement in the presidential elections in France in 2017. The only notable example of implementation of such a strategy in recent years has been the Portuguese government since 2016. This alternative strategy is a response to the demands and struggles of working people fed up with 45 years of austerity.

The social democratic proposals have four main elements. First, legal restrictions on trade unions would be diminished, and workers' rights improved, leading to rises in wages and more secure employment. Second, a new strategy for taxation, public spending and debt breaks with neoliberal austerity. Increased taxation of corporations, finance, land and land development, and the rich enables increases in spending on public services. Increased government debt is envisaged, particularly for investment in fixed capital and fixed infrastructures. Third, the government would have an active industrial strategy, encouraging greater productive investment in plant, machinery and buildings, research and development, and training. One mechanism for this is public investment banks to invest in industry and infrastructures. It is hoped that this would encourage corporations to 'unlock' their vast cash reserves (see above) and invest them in productive industry. Industrial growth would then increase government's tax revenue, reversing the deflationary effects of neoliberalism. Growth of employment would further strengthen the hand of labour against capital. Fourth, private and public investment to green industries, energy and housing would be greatly increased.

By historical standards this is a mild Keynesian programme. But in the context of 45 years of neoliberalism it would make a substantial difference to the tendencies of employment examined in the previous section. The industrial strategy and rising wages would likely accelerate the use of new automation in production, and thus increase job losses. On the other hand, extensive investment in manufacturing, in both existing and new products, should increase, creating more jobs. Increased investment in physical infrastructures, especially urban rail, and hugely increased insulation of houses, would increase construction jobs. In a

country like Britain with a very low rate of new house building, construction of social housing funded by government borrowing would increase. The greatest scope for job creation would be in the public services, funded by the increases in taxation mentioned above, and possibly by the central bank printing money (sometimes called ‘quantitative easing’). There is a desperate need for increased jobs in health, education, social care of the elderly and people with disabilities, where 45 years of cuts have taken a severe toll. These services are now increasingly in the public eye; but there are many others which have less attention paid to them: youth services; subsidies to public transport, especially urban; much tighter land use planning and regulation of the built environment (linking to taxation of development profits); libraries; the arts; and parks and open spaces. In the largest countries, millions of jobs could be created in these public services, with major social benefits. Moreover, neoliberalism has seen the lowering of wages in many types of public sector job; these could be increased, giving a boost to jobs in private-sector consumer services.

The social democratic strategy, then, could very substantially mitigate the impact of job displacement by the new production technologies. This seems to be to be a far more effective and feasible centre-left strategy than Universal Basic Income or the social economy, mentioned in the first section above. That said, the social democratic strategy will be subject to many conflicts with capital and to contradictions inherent in capitalism; but that is another blog.

We see, once again, that the prediction by mainstream writers on automation of a massive rise in unemployment in the next decades is shaky. Employment and unemployment will depend on the political-economic programme of government; and this in turn depends on the struggle of the working class, the 90%.

Rising labour productivity can enable a shorter working week

There is another economic aspect of automation which I have not yet touched on: the length of the working week. If a given volume of goods and services can be produced in fewer working hours in the economy as a whole, then there are two basic possibilities: (i) working hours remain the same and the aggregate volume of goods and services increases; or (ii) the aggregate volume of goods and services remains the same and working hours decrease. In Britain during the second half of the nineteenth century, when mechanisation and product innovation produced rises in labour productivity, workers’ struggle for a 10 hour day, and then for an 8 hour day, meant that hours decreased but that wages for some workers (skilled male workers) also increased. In the twentieth century up to the 1970s, however, reductions in the length of the working day and week were small; productivity increases were realised as increased profits or as increased real wages. Since the 1970s, wages have stagnated or been reduced; workers, especially women, have compensated for this by increasing participation in waged work and by working longer hours. Productivity gains have therefore benefitted only capital.

These long hours of waged work for both individuals and households suggest that we should consider *reducing* the average length of the working week. This could yield strong social and environmental benefits. A shorter working week could allow more time and energy for people to spend with their friends, household members and neighbours, more time for caring for dependents, for physical exercise, and for all manner of unpaid activities and creativity. *Providing that* everyone's needs for goods and services produced by wage labour were met (a big assumption which I return to below), then zero growth in the volume of goods and services could help to level out, and then reduce, the many environmental bads of the waged economy. This fundamental new direction for the organisation of work has been explored very interestingly by the New Economics Foundation in its report *21 Hours: the case for a shorter working week* (2010).

Let us then assume that the new computing technologies applied to production produce a substantial rise in labour productivity over the next few decades in addition to what would otherwise have taken place. For illustration, across the whole economy productivity increase per year has been running at around 2%; assume that with the new automation it runs at 4%. The effect of this under neoliberalism would be an increase in profits, and possibly increase in real wages for some workers - those with bargaining power in the labour market.

But other outcomes are possible. The additional output could enable real wage rises for low- and medium-paid workers (option (i) above). This is one way of addressing poverty and deprivation. But we should remember that there are other ways: the proposals in the social democratic strategy discussed above for a greatly increased stock of social housing (and thus much lower housing costs), better public transport (and thus lower transport costs), and for much expanded public services. Either of these developments – increased real wages or increased public spending and investment – would require enormous pressure from popular collective organisations.

A second possibility would be to use increases in productivity to reduce the normal working week. This would need to be done in a way that maintains weekly wages for all but the highest paid, and which increases weekly wages for the lowest paid (as discussed in the previous paragraph). This is entirely possible 'economically', in the sense of a feasible relation between hours worked and real incomes, that is, if we regard work as solely aimed at providing useful and beneficial goods and services for ordinary people (New Economics Foundation, 2010).

The problem, however, is that in a capitalist society waged work does *not* have this aim. Rather, its function in the structure and dynamics of capitalism is to create profit for business, enabling capital to maintain and expand its value. Business owns and controls of the means of production, physical and financial. It uses these to employ waged workers to add value to inputs which is appropriated as profit, and thus in turn expand the value of capital. If this process falters the economy goes into crisis: the rate of profit falls, investment falls, employment decreases, and demand falls, in a vicious circle. The dynamic of capitalism is

therefore to employ as many workers as possible for as long hours as possible, at wages low enough and work intense enough to reap a profit.

This means that capital has no interest in reducing the normal working week – to the contrary. For given hourly wages, businesses seek to employ workers for as long as possible. They have two immediate reasons for doing so. Firstly, they need to cover fixed costs such as the costs of buildings, machinery and R&D. Thus if businesses were compelled to reduce the normal working week, they would cut wages at least proportionally (in the case of labour intensive firms) or more than proportionally (in the case of firms with large fixed capital). This dynamic could be partly countered by workers working more efficiently as their working week is reduced (New Economics Foundation, 2010); but these efficiency increases vary hugely with the type of work, and even in favourable circumstances are unlikely to fully offset the reduction in hours.

The second reason that businesses seek to maintain working hours is to make the largest possible profit. Capital is never satisfied with simply ticking over; it always seeks to expand itself. In consequence, even labour-intensive firms seek to employ their workers for as long hours as possible, and so extract as much profit from them as possible.

What is ‘economically’ feasible in a physical sense (use values in Marxist language) goes against the dynamics of capitalism, that is, *capitalist* economics (exchange values). This has direct political consequences. It means that trade unions on their own stand no chance of *substantially and continually* reducing the length of the working week, except possibly for small groups of workers with strong bargaining power. It also means that a government which sought to substantially and continually reduce the working week for all workers, while maintaining real incomes, would face fierce resistance from business. This would initially take the form of arguing that such reductions were ‘unaffordable’, and of threats to disinvest if they were imposed. The achievement of substantial and continual reductions in the working week would therefore need a campaign by trade unions and socialist parties to win popular support. To do so, they have the powerful argument that a reduction in the working week with no losses of income is physically possible. It would also need a government which was anti-capitalist in the sense of imposing working hours and wage rates on employers. If business then reacted by disinvestment, then the government would have to take greater powers over production and finance capital in order to maintain employment and wage incomes.

My conclusion, then, is that productivity rises could enable reductions in the normal working week with no income losses and with some wage rises. And there are strong social and environmental reasons for pursuing this path. But this conflicts with fundamental dynamics of capitalism. Moving towards this strategy therefore requires a strong anti-capitalist movement of the trade unions, community organisations and socialist parties. As with the issue of number of jobs considered earlier in this piece, the outcome is not determined simply by technological change. It depends crucially on class relations and political struggle.

Notes

1. Considerable media attention is also being given to the application of advanced computing and IT to unpaid domestic work and leisure ('the internet of things', Siri, robots in the home, and so on). This too raises many questions about the quality of the services so provided. I do not consider these in this article, however, since my focus here is paid employment.

References

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