9 Employment

Anyone reading this book will have seen confronting news stories about robots replacing the human workforce and plunging millions into joblessness and poverty. We're so used to these warnings that we probably don't stop to think enough about their logic and take "the end of work" as something of a fait accompli. It's true that for the first time in history the advent of advanced machine learning and mobile robotics will intrude upon professional and managerial work and not simply (as has so far been the case) low-skilled "blue-collar" work. But the fact remains: there is no evidence supporting predictions of wholesale unemployment in the short to medium term caused by AI.

The science fiction writer William Gibson was fond of saying, "The future is already here—it's just not very evenly distributed." And sure enough, behind all the dire scenarios of mass worker displacement lie predictions about the uneven distribution of the profits from the AI revolution. Tech writers making gloomy predictions can readily find support in the grim economic statistics from recent decades.[1] Wages of ordinary workers have been stagnant or falling in many countries since the 1970s. The wages of production and nonsupervisory workers in the United States reached their zenith in 1973. In real terms, such workers now earn 87 percent of what they earned then.[2] At the same time, productivity has continued to rise. In the United States, as in many other countries, the lockstep relationship between productivity and the earnings of workers broke spectacularly in the mid-1970s and shows no sign of reviving. As the share of national income that goes to wage and salary earners continues to dwindle, the seemingly inexorable rise of inequality has prompted calls for new mechanisms to redistribute wealth away from the superrich.[3]

But fears about automation are as old as automation, and there is little agreement about how much of the recent bad economic news can be laid at the door of artificial intelligence and robotics. On the one hand, automation has often paid significant dividends, including increased productivity, the democratization of goods and services previously only available to the wealthy, and the increased autonomy and social mobility made possible by labor-saving appliances.[4] Authors such as Erik Brynjolfsson and Andrew McAfee have argued that AI will bring about a new industrial revolution, promising great advantages to those who manage to exploit the boom in new technologies.[5] On the other hand, it's worth remembering that most people in the first industrial revolution didn't live long enough to enjoy its benefits. The first industrial revolution spanned the eighteenth and much of the nineteenth centuries, but for most of this time it provided little benefit to ordinary workers who suffered displacement and squalid living conditions. The average height of English men decreased by 1.6 centimeters per decade over the eighteenth century.[6] For all the exciting technological advances, real wages simply couldn't keep up with the price of food. Despite rising output per worker, the purchasing power of their wages stagnated. Indeed, it wasn't until the mid-nineteenth century that real wages finally began to keep pace with productivity.[7]

What Do We Know about the Future of Work?

Debate about the effects of automation on human society has always come in two flavors. Optimists argue that automation increases economic growth, which benefits society overall. Some even suggest that it will eventually free humanity from the shackles of having to produce the necessities of life. Amongst the optimists, we find one of the most famous economists of all time—John Maynard Keynes. In his 1930 essay, "Economic Possibilities for our Grandchildren," he argued that automation and industrialization more generally would solve "the economic problem" of "the struggle for subsistence."[8] At the other end of the spectrum, the economist Jeremy Rifkin's book, *The End of Work*, paints a very different picture of mass technological unemployment and hardship.[9] These pronouncements about the effects of automation are not new. They mirror eighteenth century debates about the likely result of the first industrial revolution between writers such as David Ricardo and William Mildmay. So are we any closer to being able to predict what the current technological revolution will bring?

Much recent debate about the effects of AI and robotics on jobs has been in response to a 2013 study by Carl Frey and Michael Osborne at the University of Oxford. They found that 47 percent of total US employment had a high probability of computerization from machine learning and mobile robotics.[10] This result has been controversial, particularly as subsequent studies produced radically different results. It was pretty clear from the start that the size of predicted effects on the future of work depended strongly on the authors' methodological choices. Frey and Osborne modeled whole jobs—that is, job *categories*. Strictly speaking they found that of 702 precisely defined job categories, 47 percent were ripe for near-term automation. But notice what this means: if some component of a job was deemed to be at risk of automation, the *whole* job was assumed to be at risk. This seems counterintuitive. The fact that the typical bank clerk's job description today might only faintly resemble what it was in, say, 1980, *doesn't* mean there are no more bank clerks. More generally, automation has a way of redrawing boundaries around traditional job categories. Maybe the typical secretary or personal assistant no longer needs to come equipped with Pitman shorthand, but they might now be expected to perform functions that weren't historically typical, for example, monitoring a company's social media activity or attending more high-level meetings than was usual in earlier days. Understandably, a number of studies conducted after Frey's and Osborne's have focused less on jobs and more on *tasks*. A 2016 OECD task-based study found that only 10 percent of all jobs in the United Kingdom and 9 percent in the United States were fully automatable.[11] Other methodological factors that influence the results of such studies include how they interpret automation and computerization; timescale; judgments about likely scientific advances; and various social, economic, and demographic assumptions (e.g., about levels of migration, the global economy, etc.).[12]

This last set of assumptions can't just be swept under the rug either. Indeed, what probably makes all prognostication here a little amateurish is the fact that the shape any future workforce is likely to take is going to depend a lot on whether the jobs (or tasks) that remain are going to force a reappraisal of skills that have traditionally been undervalued. For instance, we know that women are overrepresented in the caring professions—in jobs like nursing, teaching, and counseling.[13] These jobs require empathy and people skills, what's often dubbed "emotional intelligence." But these jobs also pay lower salaries on the whole when set against jobs in industries like finance, banking, computer science, and engineering. Indeed, much care work isn't just

low paid, it's frequently unpaid and invisible.[14] There are much-discussed sociological, cultural and historical reasons why women tend to cluster in such occupations, but the net result—combined with the fact that women also tend to be their children's primary caregivers, making them less likely to reach senior level positions than men—is the infamous gender pay gap.[15]

But could the stage be set for a reversal in women's fortunes? There is research to suggest that women may, in fact, fare a whole lot better than men from automation.[16] This is because it is generally agreed that jobs requiring literacy, social skills, and empathy are at less risk of automation than jobs requiring numeracy, calculation, and brute physical force. Even tasks like medical diagnosis and contract drafting—which involve the detection of patterns in information and mechanistic or process-driven problem-solving—are all far more vulnerable to automation and machine learning than tasks involving relationship building and "emotional and spiritual labor."[17]

Of course, it's one thing to say there might be more paid care work going around and more jobs available for women than men; it's quite another to say that care work will at long last be well paid. Wages are almost always determined by scarcity, and occasionally danger and difficulty. Empathy just isn't rare enough in our species or hard enough to do. True, an economic system that made compassion and well-being as fundamental to its perspective as want and scarcity would look very different. And perhaps more care work in a society would mark the difference between an aggressively competitive business culture and a more easy-going and cooperative culture. But there's no evidence that *just* by having more care work in an economy or holding it in higher esteem we'll stop paying people based roughly on how difficult it is to do what they do and on how many people are willing and able to do it. It's also just as likely that men will end up doing much more care work than has been typical thus far.[18]

The Nature of Work

Although studies modeling the *future* effects of AI on jobs and work have proved equivocal, studies looking at the *current* effects of such technologies are producing more concrete results. We know for example that job polarization is on the rise in many countries. Traditional middle-income jobs are giving way to high-value nonroutine cognitive work and low-value manual work.[19] Disconcertingly, there is some evidence suggesting that

middle-income workers displaced by automation do not move into high-value nonroutine cognitive work.[20]

Another empirical approach is to look at incomes in areas in which new technologies have been deployed. We don't yet have evidence squarely focused on the effects of AI and machine learning, but we do when it comes to robots. Here the evidence suggests that the increasing use of robots has negative effects on both employment and wages.[21] These results are robust, as they seem to hold even when controlling for factors such as the availability of cheap imported goods, offshoring, and other influences affecting the decline in routine jobs.

A less well-known effect of the growing use of AI is its effect on working conditions. What little we do know doesn't paint a rosy picture. Consider those employed in the so-called gig economy. They are hired on very short-term contracts ("gigs") strictly on an as-needs basis via platforms such as Uber, Deliveroo, TaskRabbit, and Mechanical Turk. Although some of these workers are highly skilled and benefit from the flexibility of such work arrangements, a disproportionate number of them are poor, have little choice about the jobs they do, and little ability to negotiate better wages and conditions.[22] Many of them work in the tech sector itself (in case you thought all tech workers are well-paid twenty-somethings working for Apple, Facebook, and Google). They fill online orders in vast warehouses. They categorize Instagram status updates, videos, photos, and stories. They label images to help self-driving cars learn to detect cyclists and pedestrians. They photograph streets, detect homonyms, scan physical books, and classify violent and obscene social media posts. The repetitive and potentially dispiriting nature of much of this work belies the image many of us have of those "privileged" enough to work in the digital economy.

AI also sits behind many types of algorithmic management in which the day-to-day work of employees and contractors is assigned and assessed by algorithms. This is a disciplinary application of new technologies in which high-resolution monitoring and calibration of worker performance erodes what little agency, discretion, and autonomy a worker otherwise has.[23] Amazon has become the poster child for this regime. Its warehouses have been described as "the meatpacking assembly lines of our own age, where technological advances meld with capital's need to extract every last ounce of efficiency from its workforce."[24] Amazon employees have the speed of their work meticulously tracked, even as they are saddled with ridiculously

unrealistic performance targets. In the United States, the company has been granted patents for "ultrasonic wristbands" that are sensitive to gesture and vibration (providing "haptic feedback") in an effort to monitor suboptimal performance.[25] The asphyxiating atmosphere created by this level of surveillance would make for dystopian entertainment were it not *actually* happening, or in the offing. Not that performance monitoring systems are necessarily reliable—they don't have to be in order to make someone's life miserable. As Adam Greenfield observes, "what is salient is not so much whether these tools actually perform as advertised, but whether users can be induced to believe that they do. The prejudicial findings of such 'HR analytics' … may be acted upon even if the algorithm that produced them is garbage and the data little better than noise."[26]

As for the gig economy, even when workers receive positive ratings from their algorithmic bosses, these can effectively lock them into a single gig platform, as ratings aren't typically portable from one platform to the next.[27] On the other hand, at least in the gig economy, the flipside of controlling your workforce entirely by app—and hence at a physical distance—means that there is correspondingly less you can do to prevent organized resistance (as Uber and Deliveroo have found to their dismay in a growing number of countries).[28]

Why Work?

Let's suppose that the nature of work continues to evolve, with greater casualization, more "giggification," and higher levels of surveillance and control. It might be that these jobs represent the last *kind* of job in a mature developing digital economy, heralding a world in which there will be either much less work, very different work, or perhaps no real work at all to speak of. How should we feel about this? Before we rush to preserve current jobs or invent new ones, we'd do well to pause and consider what it is about work we value and what it is that all of us have a stake in salvaging from a world in which work provides the main means of subsistence. Obviously, we ought to welcome any technology that relieves us of onerous, dangerous, and demeaning work. But what about work that isn't onerous, dangerous, and demeaning? Could we do without work altogether? Is work in other ways beneficial? Is it virtuous or in any sense dignifying?

The idea that we could live well while working much less has been around for a long time, but it was most famously championed by the philosopher

Bertrand Russell in his 1932 essay, "In Praise of Idleness." Russell's claim that life would be better if most people worked about four hours a day is based on three ideas. First, that work is generally onerous. Given the option, most of us would do less of it. Second, that until relatively recently, most Europeans were subsistence farmers. The notion that work is virtuous and a source of dignity originates from an era in which virtually the sole imperative of humanity was to secure physical sustenance through personal toil—basically, tilling soil and growing food on common land. However, after the first industrial revolution, this mode of subsistence ceased to characterize the general lot of mankind, and innovative agricultural methods would see output reach levels not attainable through manual exertion alone. As Russell put it, the dignity of labor was an important idea before the industrial revolution but became an "empty falsehood" preached by the wealthy who "take care to remain undignified in this respect."[29] The final part of Russell's argument is that during the First World War, most of the English population was withdrawn from productive occupations and engaged one way or another in sustaining the war effort. Despite their engagement in this singularly wasteful and unproductive endeavor, he notes that the general level of physical well-being among unskilled wage earners on the side of the Allies was higher than before or since.

Russell concludes: "The war showed conclusively that, by the scientific organization of production, it is possible to keep modern populations in fair comfort on a small part of the working capacity of the modern world. If, at the end of the war … the hours of work had been cut down to four, all would have been well. Instead of that the old chaos was restored."[30]

Farming and the production of the rest of what Russell calls the necessaries of life have, of course, become much more industrialized since 1932, and AI and robotics promise many more efficiencies in the near future. The reality of global warming is also calling into question the long-held assumption that the success of nations must be underpinned by the production of more and higher value goods and services, as reflected in higher GDP.[31] There is now actually an *inverse* relation between the wealth of OECD countries and the average number of hours worked by their citizens. The greatest average number of hours worked annually per citizen are in Mexico (2,250) South Korea (2,070), Greece (2,035), India (1,980), and Chile (1,970), whereas the fewest are in France (1,472), the Netherlands (1,430), Norway (1,424), Denmark (1,410), and Germany (,1363).[32]

Of course, as most economies are organized, Russell's prescription isn't one that could safely be followed by most of us today. But at a national level it does suggest that rationing work, perhaps by decreasing the length of the work week, might be beneficial in relatively well-off countries. But would a world with much less work be good for us? Despite the medieval origins of the notion that work is virtuous, is there really nothing virtuous, dignifying, or even edifying about work?

Probably part of the residual virtue that attaches to paid work attaches likewise to many forms of private income generation, even if these don't involve actual physical or mental labor (like passive income—rents, dividends, interest, and the like). The virtue here may derive from the belief that, by earning a living and making one's own way in life—however one manages to do this, be it through work or rent—one possesses the independence and maturity we associate with fully developed adulthood, at least in Western cultures. If this is true, though, the moral valuation involved obviously needn't be commensurate with any actual effort on the part of the earner.

Another part of what could make us think of work as virtuous may be that it frequently requires a degree of diligence, dedication, discipline, or at any rate structured living—qualities that may be perceived to be virtuous inasmuch as the opposites of these qualities indicate a lack of character, dependability, stability, or maturity. But such traits don't depend on the contract of employment for their existence. Anyone seriously invested in a personal project—poetry, printmaking, building, or renovating a home—needs to have a degree of diligence and discipline. Indeed, anyone out of work who's *looking* for work probably has to draw on greater reserves of such qualities than someone in regular, secure, long-term employment.

We could, if we wanted to, compile a list of the personal qualities any worker must be assumed to possess and chalk up the virtue or dignity of employment to any one of them. But we doubt the exercise will prove successful in isolating the *one* feature of paid work that *uniquely* explains its dignity or virtue. Truth is, it's not employment *per se* that's dignifying, virtuous, or edifying. If these labels can attach to anything, it's to those qualities we've already mentioned—diligence, dedication, etc.—*wherever* and *whenever* they're manifested, regardless of the existence of a formal contract of employment.

Still, there's no denying that for most people an employment contract will provide the usual forum in which such traits can be exercised, developed, and nurtured. One immensely valuable opportunity that formal employment

affords fairly readily is social connection with colleagues. Although this varies from job to job and the connection isn't always positive, the opportunity for meaningful collaboration with others is terrifically important and under threat for many in the gig economy. Of course, one can find meaningful human connection outside work (obviously!), and, yes, one could join a community organization to experience the joys and sorrows of communal enterprise and shared identity. For that matter (and to repeat), one doesn't need formal work to pursue personal projects, form five-year plans, or establish long-term life goals. A life of leisure needn't conform to a stock stereotype, like hunting in the morning and fishing in the afternoon (as Karl Marx put it). But still, how you spend your time when the imperatives of survival have been met is really your answer to the question of what life is for. And that's a question that might call for at least a bit of personal reflection. Just like money, leisure must be thoughtfully spent. Russell decried the passive character of many popular amusements (attending the cinema, watching spectator sports, etc.).[33] He put it down partly to exhaustion—people are so tired from their daily exertions that they don't have the energy for anything vaguely strenuous at the end of a day's work—but also to a lack of proper training in how to use one's time wisely.[34] Taking a "discriminating pleasure in literature," for example, requires cultivation, practice, and perseverance. He's obviously not saying that spending our leisure time wisely is beyond us, by any means. But good quality leisure isn't a given, either, just because you happen to have the time for it. It takes "well-directed effort," as he put it.[35]

The bonds of employment allow many of us to defer these questions or at least not to have to consider afresh, day after day, what we want to do with our lives. In this sense, employment is valuable in the same way that having one local water company, postal service, or rail service, is valuable—it relieves us of the anxiety of choice. Not for a moment would we wish to romanticize, neutralize, or justify the evils of wage slavery. But a humane contract of employment (with hours compatible with the need for sleep, recreation, and family life, with generous benefits, paid holidays, and provisions for psychological and spiritual well-being) does at least provide many of us with the structures we'd otherwise have to put in place for ourselves, including the bonds of solidarity forged in the crucible of mutual endeavor.