

AUTOMATION AND THE FUTURE OF WORK—2

WE LIVE IN an era of dizzying technological change, with smartphones, self-driving cars and automated stock-trading desks apparently set to transform life across the globe. What will human beings do in an automated future? Will we be able to adapt our social and political institutions to realize the dream of human freedom presaged by a new age of machines? Or will it turn into a nightmare of mass joblessness? In Part One of this essay, I identified a new automation discourse, propounded by liberal, right-wing and left analysts alike.¹ These automation theorists claim that mass technological unemployment will need to be managed by the provision of universal basic income (UBI), since large sections of the population will lose access to wage labour.² I argued that the resurgence of this feverish discourse is a response to a real trend unfolding across the world: a chronic under-demand for labour. However, the explanation the automation theorists offer—runaway technological change destroying jobs—is false. The real cause of the persistently low demand for labour is the progressive slowdown of economic growth since the 1970s, as industrial overcapacity spread around the world, and no alternative growth engine materialized—a development originally analysed by Robert Brenner, and belatedly and obliquely recognized by mainstream economists under the name of ‘secular stagnation’ or ‘Japanification’.³ As economic growth decelerates, job creation slows, and it is this, not technology-induced job destruction, which is depressing the global demand for labour.

In Part Two, I demonstrate that employment outcomes have differed in important respects from the automation theorists’ predictions. I analyse the contemporary dynamics of the global labour market and consider

the solutions automation theorists have proposed, notably UBI, before going on to consider, as a thought experiment, an alternative approach to achieving a post-scarcity future. First, however, I will argue that it is crucial that we reconceive of the present situation as marked not by the imminent arrival of mass *un*employment, as automation theorists suggest, but by continuously rising *under*-employment. A survey of worldwide vistas of insecure work shows that this new reality has already been accepted by wealthy elites. Turning the tide towards a more humane future will therefore depend on masses of working people refusing to accept a persistent decline in the demand for their labour, and the rising economic inequality it entails. Struggles against these outcomes are already unfolding across the globe. If they fail, maybe the best we will get is a slightly higher social wage in the form of UBI. However, we should not be fighting for this goal, but rather to inaugurate a post-scarcity planet.

I. GLOBAL LABOUR-MARKET DYNAMICS

What lessons can be gleaned from past experiences of job losses and profit-driven technological breakthroughs? On their own, these have

¹ Aaron Benanav, 'Automation and the Future of Work-1', NLR 119, Sept–Oct 2019.

² The automation theorists under discussion include Erik Brynjolfsson and Andrew McAfee, *The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies*, London 2014; Martin Ford, *Rise of the Robots: Technology and the Threat of a Jobless Future*, New York 2015; Carl Frey and Michael Osborne, 'The Future of Employment: How Susceptible Are Jobs to Computerization?', *Technological Forecasting and Social Change*, vol. 114, January 2017; Andrew Yang, *The War on Normal People: The Truth About America's Disappearing Jobs and Why Universal Basic Income Is Our Future*, New York 2018; Andy Stern, *Raising the Floor: How a Universal Basic Income Can Renew Our Economy and Rebuild the American Dream*, New York 2016; Nick Srnicek and Alex Williams, *Inventing the Future: Postcapitalism and a World Without Work*, London and New York 2015; Nick Dyer-Witford, *Cyber-Proletariat: Global Labour in the Digital Vortex*, London 2015; Peter Frase, *Four Futures: Life After Capitalism*, London and New York 2016; Manu Saadia, *Treconomics: The Economics of Star Trek*, San Francisco 2016; Aaron Bastani, *Fully Automated Luxury Communism: A Manifesto*, London and New York 2019; see also Nick Dyer-Witford et al., *Inhuman Power: Artificial Intelligence and the Future of Capitalism*, London 2019.

³ Robert Brenner, *The Economics of Global Turbulence*, London and New York 2006 [1998]. On secular stagnation, see Lawrence Summers, 'Secular Stagnation and Macroeconomic Policy', *IMF Economic Review*, vol. 66, no. 2, 2018; on 'Japanification', see John Plender, 'Why "Japanification" Looms for the Sluggish Eurozone', *Financial Times*, 19 March 2009.

never overcome human drudgery altogether. Nevertheless, they do periodically result in sweeping job destruction in certain industries, particularly when they allow firms to overcome a long-standing resistance to industrial development. Agriculture, for example, was one of the first sectors to be transformed by modern production methods: in the 15th- and 16th-century English countryside, new forms of animal husbandry on enclosed farms were combined with crop rotation to raise yields. Yet farming remained difficult to mechanize, due to the uneven terrain of fields and seasonal cycles, and for centuries it continued to be a major source of employment.⁴ In the 1940s, however, advances in synthetic fertilizers, the hybridization of crops and the mechanization of farming implements made it possible to develop industrialized forms of agricultural production, and operative logics shifted dramatically.⁵

Labour productivity took off, as farms came to resemble open-air factories. Given the limits to the growth of the demand for agricultural outputs, the sector then shed workers at an incredible pace. As late as 1950, agriculture employed 24 per cent of the workforce in West Germany, 25 per cent in France, 42 in Japan, and 47 in Italy; by 2010, all of these shares were under 5 per cent. During the 1950s and 60s Green Revolution, methods of industrialized agriculture were adapted for tropical climates, with stunning consequences for global agricultural employment: in 1983, the majority of the world's workers were still in agriculture; that figure has since fallen to 25 per cent.⁶ The major global job destroyer in the 20th century was not 'silicon capitalism' but nitrogen capitalism. No mechanism existed within the labour market to ensure that as many new jobs were created outside of agriculture as had been lost within it.

Firms are still seeking ways to overcome obstacles to industrialization, but in the present era of slowing overall growth rates and generally slack labour markets, these innovations tend to leave working people without steady jobs. For example, on a global scale, the mechanization

⁴ Strong tariff protections against imports from lower-wage countries were also key. See Niek Koning, *The Failure of Agrarian Capitalism: Agrarian Politics in the UK, Germany, the Netherlands and the USA, 1846–1919*, London 2002.

⁵ See FAO, *State of Food and Agriculture 2000*; and Marcel Mazoyer and Laurence Roudart, *A History of World Agriculture: From the Neolithic Age to the Current Crisis*, London 2006, pp. 375–440.

⁶ Statistics drawn from the Groningen Growth and Development Centre, '10-Sector Database', updated January 2015, and from FAO, *FAOSTAT* and ILO, *Key Indicators of the Labour Market*, 9th edition, 2015.

of electronics assembly and apparel and footwear industries would be devastating: these sectors employ large numbers of people worldwide and generate foreign exchange for otherwise cash-strapped economies. Sewing in particular has long been resistant to technological modernization: it involves detailed work with fabrics, which machines have trouble manipulating; the last major innovation in the field was the Singer sewing machine in the 1850s. Electronics assembly work, although of more recent vintage, has proven similarly resistant to labour-saving innovation, since it too requires the delicate manipulation of tiny parts. As technological laggards within larger, highly mechanized production processes, these jobs were some of the first to globalize in the 1960s. Retail, apparel and electronics firms contracted suppliers in low-wage countries to meet a growing demand.⁷ These industries remain significant as the first links of industrial supply chains, where they are subject to fierce competition among suppliers.

Much of this kind of work has relocated to China since the 1990s. However, even as Chinese wages rise and other countries become more competitive, advances in robotics may finally be overcoming long-standing resistance to further mechanization within these fields. Foxconn is deploying ‘foxbots’ to stave off competition from electronics assemblers in lower-wage countries. In China and Bangladesh, apparel companies are using ‘sewbots’ and new knitting technologies, which may also be extended to the manufacture of footwear. These innovations are unlikely to lead to full automation in these sectors, but they could eliminate lots of jobs very quickly, and block access to the global economy for further low-wage countries, in Africa for example.⁸ It is unclear whether these technological developments are ten or twenty years away, and they may not occur on any scale at all. Yet even without major advances in

⁷ See Ellen Israel Rosen, *Making Sweatshops: The Globalization of the US Apparel Industry*, London 2002; and Jefferson Cowie, *Capital Moves: RCA's Seventy-Year Quest for Cheap Labour*, New York 1999.

⁸ Phil Neel, ‘Swoosh’, *Ultra*, 8 November 2015; Anna Nicolaou and Kiran Stacey, ‘Stitched Up By Robots’, *FT*, 19 July 2017; Jennifer Bissell-Linsk, ‘Robotics in the Running’, *FT*, 23 October 2017; Jon Emont, ‘The Robots Are Coming for Garment Workers. That’s Good for the US, Bad for Poor Countries’, *WSJ*, 16 February 2018; Kevin Sneader and Jonathan Woetzel, ‘China’s Impending Robot Revolution’, *WSJ*, 3 August 2016; Saheli Roy Choudhury, ‘China Wants to Build Robots to Overtake Its Rivals—But It’s Not There Yet’, *CNBC*, 16 August 2018; Brahim Coulibaly, ‘Africa’s Race Against the Machines’, *Project Syndicate*, 16 June 2017; AFP, ‘Tech to Cost Southeast Asia Millions of Jobs, Doom “Factory Model”, Warns WEF’, *AFP International Text Wire*, 12 September 2018.

automation, ‘Industry 4.0’ and ‘smart-factory’ technologies will increase the advantages of industrial clustering in the vicinity of related services, with the result that manufacturing jobs are more likely to be globally concentrated than dispersed.⁹

By overcoming impediments to mechanization in sectors that have hitherto acted as major labour-absorbers, new technologies may serve as a secondary cause of the under-demand for labour. However, the key to explaining this phenomenon is not the rapid pace of job destruction in specific branches, if it occurs, but the absence of a corresponding pace of job creation in the wider economy. As I argued in NLR 119, the main explanation for that is not rising productivity-growth rates, as the automation theorists claim, but inadequate output demand, due to the proliferation of industrial capacities across the world, an associated over-accumulation of capital, and a consequent downshift in rates of manufacturing expansion and economic growth overall. These remain the primary economic and social causes of the slack in the labour market that is wracking workers across the world.

Mass under-employment

At the core of contemporary automation discourse is the concept of what the Harvard economist Wassily Leontief called ‘long-run technological unemployment’. Extrapolating from particular instances of automation and job loss, this is portrayed as an economy-wide phenomenon. Like ‘whale oil’ and ‘horse labour’, Erik Brynjolfsson and Andrew McAfee explain in *The Second Machine Age*, human exertion may soon find itself ‘no longer needed in today’s economy even at zero price’.¹⁰ Were full

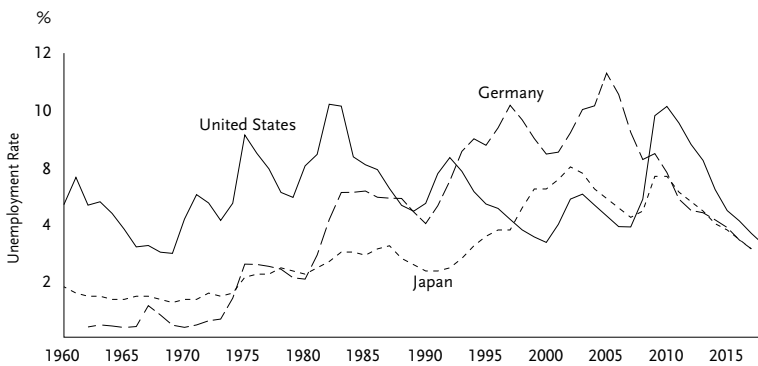
⁹ Mary Hallward-Driemeier and Gaurav Nayyar, *Trouble in the Making? The Future of Manufacturing-Led Development*, Washington DC 2018, pp. 93–6. Global employment in the IT and call-centre sectors also seems set to decline as cloud-based computing obviates the need for firms to develop and monitor their own websites and online databases; large Indian IT firms are already shedding jobs. See Simon Mundy, ‘India’s Tech Workers Scramble for Jobs as Industry Automates’, FT, 27 May 2017.

¹⁰ Wassily Leontief, ‘Technological Advance, Economic Growth and the Distribution of Income’, *Population and Development Review*, vol. 9, no. 3, 1983, p. 409; Brynjolfsson and McAfee, *Second Machine Age*, p. 179. Dyer-Witheford speaks of a ‘deepening pool of unemployed populations, no longer required by digital capital’: *Cyber-Proletariat*, p. 3, while Yang refers to a ‘growing mass of the permanently displaced’: *War on Normal People*, p. xli.

automation ever achieved, the resulting jobs apocalypse would quickly demonstrate that social life had to be reorganized so that waged work was no longer at its centre.¹¹ But has the decline in the demand for labour actually been accompanied by rising unemployment rates, as the automation discourse suggests it should have?

In the advanced capitalist countries, average unemployment rates rose in the 80s and 90s, and the 2008 crisis sent them back up. But over the past decade, they have generally dropped again, although at a slower pace than after past recessions (Figure 1). These data are sometimes taken as evidence that the demand for labour has not secularly declined. The point is rather that the forms in which that decline expresses itself have shifted from *unemployment* to various kinds of *under-employment*, which are more difficult to measure.¹² As many commentators have

FIGURE 1: *Unemployment Rates in the US, Germany and Japan, 1960–2017*



Source: OECD Main Economic Indicators, Unemployment Rate, Ages 15 and over.

¹¹ According to science-fiction writer Arthur C. Clarke, 'the goal of the future is full unemployment, so we can play': 'Free Press Interview: A. C. Clarke', *Los Angeles Free Press*, 25 April 1969. See also Brynjolfsson and McAfee, *Second Machine Age*, pp. 180–1; and Ford, *Rise of the Robots*, pp. 194–6.

¹² On the theory and history of jobless recoveries in the US, see Nir Jaimovich and Henry E. Siu, 'Job Polarization and Jobless Recoveries', NBER Working Paper no. 18334, August 2012, revised November 2018. On the limits of unemployment as a measure of labour-market health, see David Blanchflower, *Not Working: Where Have All the Good Jobs Gone?*, Princeton 2019. On the genesis of unemployment as an economic category, see Michael Piore, 'Historical Perspectives and the Interpretation of Unemployment', *Journal of Economic Literature*, vol. 25, no. 4, 1987.

recognized, we are heading towards a ‘good job-less future’ rather than a ‘jobless’ one: ‘workers have to keep working in order to feed themselves, so they take any jobs in sight’, even those offering poor pay, limited hours or terrible working conditions.¹³ Automation theorists interpret this as a consequence of growing technological unemployment, occurring somewhere offstage. In reality, rapid automation of production is hardly taking place at all—offstage or anywhere else.

In the decades since the early 1970s, as unemployment rates first rose and then stubbornly refused to fall, governments pushed for the weakening of labour-market protections and scaled back unemployment benefits.¹⁴ ‘Workfare’ policies, forcing the unemployed back to work, replaced passive income-support systems as the main institutional response to job loss. In countries such as the US, UK and Germany, few workers remain visibly and countably unemployed for long. Instead, they are typically obliged to join new labour-market entrants in jobs that are part-time, temporary or otherwise precarious, in economies that can no longer offer them anything better. The degree to which precarity then spreads across the aggregate workforce varies by country. Such shifts are easiest to document in the US, where non-unionized workers lack basic employment protections and, except in cases of outright discrimination, can be hired and fired at will. Here the unemployed were reabsorbed but at the cost of wage stagnation and worsening conditions.¹⁵

By contrast, in parts of Europe and wealthy East Asia, where employment protections are stronger, important sections of the labour force are insulated from the market pressures associated with periods of joblessness. Government strategy here has been to allow disadvantaged classes of workers to emerge. These ‘non-standard’ workers have no access to employment protections and are obliged to moderate their wage demands

¹³ Yang, *War on Normal People*, p. 80. Laura Tyson, ‘Labour Markets in the Age of Automation’, *Project Syndicate*, 7 June 2017.

¹⁴ For an account of how different welfare-state regimes adapted to the return of high unemployment, see Gøsta Esping-Andersen, *Social Foundations of Postindustrial Economies*, Oxford 1999; and Kathleen Thelen, *Varieties of Liberalization and the New Politics of Social Solidarity*, Cambridge 2014. For a critical response to Thelen, see Lucio Baccaro and Chris Howell, *Trajectories of Neoliberal Transformation: European Industrial Relations since the 1970s*, Cambridge 2017.

¹⁵ For the classic account, see Barry Bluestone and Bennett Harrison, ‘The Great American Jobs Machine: The Proliferation of Low Wage Employment in the US Economy’, Study for the Joint Economic Committee, Washington DC 1986.

to meet labour-market realities.¹⁶ Between 1985 and 2013, the share of ‘non-standard employment’ in total employment rose: from 21 per cent to 34 per cent in France; from 25 to 39 per cent in Germany; and from 29 to 40 per cent in Italy. In Japan, the share of ‘non-regular employment’ rose from 17 per cent in 1986 to 34 per cent in 2008, with similar trends unfolding in South Korea. These changes in the composition of employment are even more dramatic in new job offerings: 60 per cent of jobs created in OECD countries in the 1990s and 2000s were non-standard.¹⁷ Labour markets in these countries are becoming bifurcated between workers still in ‘standard’ employment, with relative job security, and a growing mass of typically younger outsiders who lack these benefits.¹⁸

In low- and middle-income countries, where the majority of the world’s workers live, ‘non-standard’ work has always been the norm; the ILO estimates that barely a fifth of unemployed workers receive benefits worldwide.¹⁹ The unemployed are therefore forced to find a source of income as quickly as possible, with the result that the measured unemployment rate is just 5.3 per cent in these regions, despite the dearth of job opportunities. Workers who lose their jobs mostly join young labour-market entrants in working informally—often in unincorporated micro-enterprises of five or fewer workers. Almost 70 per cent of employment in low- and middle-income regions was classed as informal in 2016.²⁰

Post-industrial doldrums

Instead of rapidly rising unemployment associated with a breakthrough to an automated future we are seeing rampant under-employment due

¹⁶ See Patrick Emmenegger et al., eds, *The Age of Dualization: The Changing Face of Inequality in Deindustrializing Societies*, Oxford 2012, on the evolution of insider/outsider distinctions within European welfare states. For an overview, see ILO, *Non-Standard Employment Around the World*, Geneva 2016.

¹⁷ OECD, *In It Together: Why Less Inequality Benefits All*, 2015, p. 144. See also Shihō Futagami, ‘Non-Standard Employment in Japan: Gender Dimensions’, International Institute for Labour Studies Discussion Paper DP/200/2010, Geneva 2010, p. 29.

¹⁸ See Bruno Palier and Kathleen Thelen, ‘Institutionalizing Dualism: Complementarities and Change in France and Germany’, *Politics and Society*, vol. 38, no. 1, 2010; David Rueda, ‘Dualization, Crisis and the Welfare State’, *Socio-Economic Review*, vol. 12, no. 2, 2014.

¹⁹ In sub-Saharan Africa, only 3 per cent of workers are covered by unemployment benefits—as compared to 76 per cent in high-income countries: ILO, *World Employment Social Outlook: The Changing Nature of Jobs*, Geneva 2015, p. 80.

²⁰ See, respectively, the ILO’s *Key Indicators of the Labour Market*; and *Women and Men in the Informal Economy: A Statistical Picture*, 3rd edn, Geneva 2018, p. 23.

to worsening economic stagnation.²¹ Rather than being put out of work by the low demand for their labour, people are forced to work for lower than normal wages, and in worse than normal working conditions. Those who can't do so drop out of the labour force. Life in stagnant economies has thus come to be defined by intense employment insecurity, represented in a plethora of science-fiction dystopias populated by a redundant humanity.²² Under-employment is becoming a standard feature of labour markets, but one that lacks a standard form of expression. From the mid-60s onwards, as labour surpluses expanded globally, multinational firms began to engage in labour-market arbitrage, playing suppliers off against each other to obtain productive labour at low prices, which they then used to compete in oversupplied global markets. Industrial firms have taken advantage of employment insecurity not only in low-income countries, but also in the high-income world, moderating workers' wage demands by creating multi-tiered contracts, or hiring workers outside the bounds of standard labour law.

Yet only about 17 per cent of the global labour force works in manufacturing, with an additional 5 per cent in mining, transportation and utilities.²³ The vast majority of the world's under-employed workers therefore end up finding jobs in the highly heterogeneous service sector, which accounts for between 70 and 80 per cent of total employment in high-income countries, and the majority of workers in Iran, Nigeria, Turkey, the Philippines, Mexico, Brazil and South Africa.²⁴ The post-industrial economy we have inherited—now finally on a world scale—is, however, rather unlike the one whose emergence Daniel Bell first predicted in 1973: instead of an economy of researchers, tennis instructors and Michelin-rated chefs, ours is predominantly a world of side-street barbers, domestic servants, fruit-cart vendors and Walmart shelf-stackers.²⁵

²¹ Some automation theorists do identify under-employment as a common feature of contemporary economies, but they have trouble explaining it, focused as they are on the apparent dynamism of technological change. See, for example, Stern, *Raising the Floor*, p. 185; Yang, *The War on Normal People*, pp. 79–80.

²² Examples of such dystopian visions include Alfonso Cuarón's *Children of Men* (2006) and Neill Blomkamp's *District 9* (2009) and *Elysium* (2013), as well as the Brazilian TV series *3%* (2016), created by Pedro Aguilera.

²³ ILO, *Key Indicators of the Labour Market*. Of that 17 per cent, a sizable fraction are informally employed, engaging in domestic industry: producing bricks, cigarettes, locks and shoes in tiny household or backyard shops and foundries.

²⁴ According to the ILO, service workers came to represent the majority of the global labour force in 2015: *Key Indicators of the Labour Market*.

²⁵ Daniel Bell, *The Coming of Post-Industrial Society*, New York 1973.

The basic pattern of employment growth in services, described by Princeton economist William Baumol in the early 1960s, helps explain why under-employment in the sector is such a major feature of today's economy—and why the automation theorists' account falls askew.²⁶ Baumol explained rising service-sector employment by pointing out that service occupations see lower rates of mechanization and productivity growth than the industrial sector. If demand for services increases, employment does too, and by almost as much (Figures 2 and 3)—unlike in manufacturing, where most output growth is generated by rising productivity rather than expanding employment. Of course, some services, like wholesale trade, see spurts of rapid productivity growth, but these fail to coalesce in the sustained, sector-wide productivity growth of the sort that was endemic to manufacturing over the long history of its industrial development.

Since services cannot rely on price effects for expanding demand—that is, rising productivity leading to falling prices and hence to increased demand—we should expect service-sector employment to grow slowly. As Baumol showed, service-sector prices suffer from a 'cost-disease': sluggish rates of productivity growth mean that services become ever more expensive relative to goods.²⁷ Service-sector demand must thus rely on income effects for its expansion—the growth of demand for services depends on the growth of incomes across the wider economy. This means that as the rate of overall economic growth slows with the dilapidation of the industrial growth-engine, the pace of service-sector employment growth should slacken, too.

But despite advanced economies growing more slowly, service-sector employment expanded quickly in certain low-wage, precarious occupations. It is at this point that logics of under-employment come into play. It turned out to be possible to lower the prices of these services—and so to expand demand for them—without raising levels of productivity, by

²⁶ See William Baumol, 'Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis', *American Economic Review*, vol. 57, no. 3, June 1967, pp. 415–26, as well as William Baumol et al., *Productivity and American Leadership: The Long View*, Cambridge MA 1989.

²⁷ According to Baumol, it is actually the falling price of manufactures that makes services seem to be growing more expensive. The theory that changes in relative prices are determined by differential rates of labour-productivity growth was the original intuition behind the labour theory of value. See Adam Smith, *Wealth of Nations*, New York 2000, pp. 73–4.

FIGURE 2: *Service Sectors in the US, France and Italy, 1980–2010*

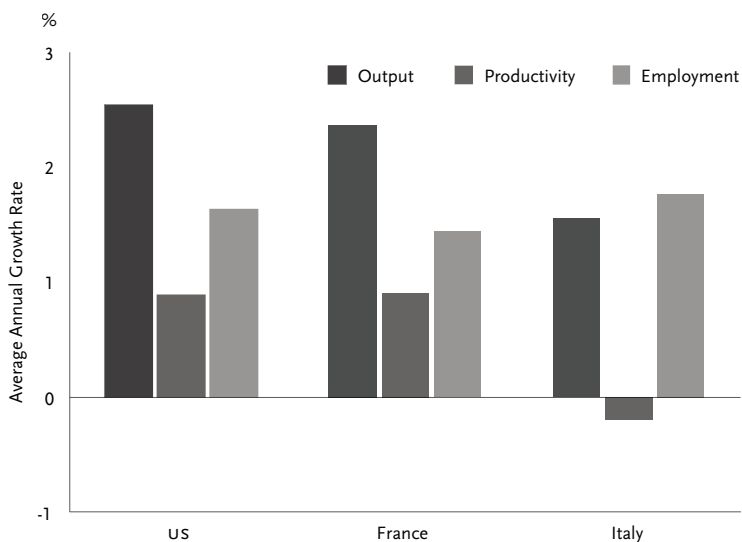
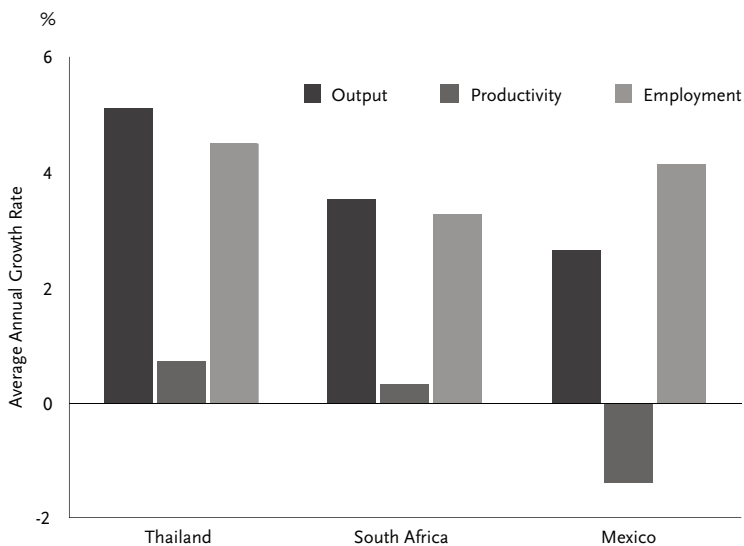


FIGURE 3: *Service Sectors in Thailand, Mexico and South Africa, 1980–2010*



Source: Groningen Growth and Development Centre, 10-Sector Database, January 2015 edition.

paying workers less, or suppressing the growth of their wages relative to whatever meagre increases in their productivity were achieved over time.²⁸ The same principle applies to self-employed workers, who, by offering to work for less, are able to create demand for their labour at the expense of their incomes. The service sector is the choice site for job creation through super-exploitation because the wages of service workers make up a relatively large share of their final price. Particularly in low- and medium-income countries, productivity growth in many services has been negative, as people contrive work for themselves via involutionary job-creation strategies. The extent to which firms are allowed to take advantage of such income-insecure workers depends on each country's labour-protection laws.

As under-employment rises, inequality must intensify. Masses of people can only work as long as the growth of their incomes is suppressed relative to the average rate.²⁹ The consequence is an expanding gap between the growth of real wages and that of productivity levels, contributing to the 9 per cent shift from labour to capital incomes in the G20 countries over the past fifty years. Worldwide, the labour share of income fell by 5 per cent between 1980 and the mid-2000s, as a growing portion of income growth was captured by a tiny class of wealth-holders.³⁰ In fact, increases in inequality are worse than these statistics suggest, since the distribution of labour income has itself become more unequal, with the largest pay rises going to managers. According to a recent study, between the late 1980s and the early 2010s, labour productivity grew faster than average wages, which in turn grew faster than median wages across the

²⁸ For a similar explanation, see Torben Iversen and Anne Wren, 'Equality, Employment and Budgetary Restraint: The Trilemma of the Service Economy', *World Politics*, vol. 50, no. 4, 1998.

²⁹ As David Autor and Anna Salomons note in their criticism of the automation discourse, 'labour displacement need not imply a decline in employment, hours or wages', but can hide itself in the relative immiseration of the working class, as 'the wage bill—that is, the product of hours of work and wages per hour—rises less rapidly than does value added': 'Is Automation Labour-Displacing? Productivity Growth, Employment and the Labour Share', *Brookings Papers on Economic Activity*, 2018, pp. 2–3.

³⁰ ILO and OECD, 'The Labour Share in the G20 Economies', Report prepared for the G20 Employment Working Group, February 2015, p. 3. IMF, *World Economic Outlook*, 2017, Washington DC 2017, p. 3. See also Loukas Karabarbounis and Brent Neiman, 'The Global Decline of the Labour Share', *Quarterly Journal of Economics*, vol. 129, no. 1, 2014.

OECD.³¹ As inequality intensifies, opportunities for super-exploitation expand; it begins to make sense for richer households to hire the poor to perform tasks they would otherwise do for themselves—solely because of the extreme difference in the price of their respective labours.

These trends suggest that the apocalyptic crisis of labour-market dysfunction that automation theorists anticipate will not take place. Instead, unemployment will continue to spike during downturns and then give way to under-employment and rising inequality. In *Rise of the Robots*, Martin Ford's worst nightmare would be if the 'economic system eventually manages to adapt to the new reality' of labour displacement, but in truth, it has. As Mike Davis put it, the 'late-capitalist triage of humanity' has 'already taken place'.³² Unless halted by concerted political action, the coming decades are likely to see more of the same: overcapacity in international markets for agricultural and industrial products will continue to push workers out of those sectors and into services, which will see its share of global employment climb from 52 per cent today to 70 or 80 per cent by mid-century. Since overall rates of economic growth are set to remain low, the service sector will absorb job losers and new labour-market entrants only by increasing income inequality.

This is not to say that the poor will get poorer, but that their share of income growth will remain much smaller than their share of the population. As Thomas Piketty and his colleagues have shown, incomes for the poorest half of the global population doubled between 1980 and 2016 (though rising by only a tiny amount in absolute terms), but that accounted for only 12 per cent of overall income growth; the richest one per cent captured more than twice that share—27 per cent—over the same period.³³ Barring a shift in labour's ability to press its interests, containing economic inequality will depend on the strength of welfare-state institutions. So far, these have tended to give way in the face of economic stagnation. In sluggish economies periodically wracked by austerity, it is

³¹ Andrew Sharpe and James Ugucconi, 'Decomposing the Productivity-Wage Nexus in Selected OECD Countries, 1986–2013', in OECD, *International Productivity Monitor*, no. 32, 2017, p. 31.

³² Ford, *Rise of the Robots*, p. 219; Mike Davis, *Planet of Slums*, London and New York 2006, p. 199.

³³ Facundo Alvaredo et al., eds, *World Inequality Report 2018*, Cambridge 2018, p. 52. Some portion of the income gains of the poorest 50 per cent was eaten up by higher living costs in cities, which are notoriously difficult to measure; urbanization increased from 39 to 54 per cent over the same period.

easier to blame the resulting social deterioration on vulnerable sections of the workforce—immigrants, women, racial and religious minorities—than to unite around a new, emancipatory social project.

2. A SILVER BULLET?

The automation discourse has identified a set of troubling tendencies in the world economy associated with a persistently low demand for labour. The social crisis entailed by this long-unfolding trend is worse than the statistics indicate. Growing numbers find themselves excluded from meaningful participation in the economy and from the sense of power and purpose that it affords, even under the adverse conditions of capitalist societies. Atomization, amplified by job insecurity and inequality, renders people susceptible to the appeal of economic nationalism, which claims to solve globalization's problems by putting 'our country first'. Automation theorists are attentive to these dangers; the morbid symptoms of a decline in the demand for labour will not be alleviated by tariff barriers or job-training facilities.³⁴ Measured against the slow-burning catastrophe of the present era, such bromides offer little hope. The automation theorists therefore attempt a radical rethink. In this respect, automation is a lot like global warming: when people take it seriously, they find themselves willing to consider revisions to the basic structure of social life that they otherwise would have thought impossible. Naming the present world as obsolete, the automation theorists dream up radical ways to resolve the crisis of the world of work. Their solutions are worth considering, even if, as I have been arguing, they are wrong about its causes.

The automation theorists' principal proposal is a universal basic income: a no-strings-attached income paid to every citizen.³⁵ Set at a high enough level, UBI would end poverty outright. A UBI would provide workers in

³⁴ See *inter alia* Darrell West, *The Future of Work: Robots, AI and Automation*, Washington DC 2018, p. 139; Yang, *War on Normal People*, pp. 150–61, 75–7; Eduardo Porter, 'Is the Populist Revolt Over? Not If Robots Have Their Way', *NYT*, 30 January 2018; Ford, *Rise of the Robots*, pp. 249–52.

³⁵ See Philippe van Parijs and Yannick Vanderborght, *Basic Income: A Radical Proposal for a Free Society and a Sane Economy*, London 2017, p. 8; Guy Standing, *Basic Income: A Guide for the Open-Minded*, London 2017. This proposal is discussed in Brynjolfsson and McAfee, *Second Machine Age*, pp. 232–41; Ford, *Rise of the Robots*, pp. 257–9; Stern, *Raising the Floor*, pp. 171–222; Yang, *War on Normal People*, pp. 165–74.

insecure employment with a measure of security, a crucial reform in an era of low labour demand and mass under-employment. On the basis of these arguments, automation theorists often present UBI as a neutral policy instrument—appealing to left and right—which solves the problem of global unemployment, just as the Green Revolution technologies were supposed to solve the problem of global hunger. Of course, such technocratic neutrality is a fantasy: depending on the manner in which it is implemented, UBI will lead in radically different directions, most of which will not bring us closer to a world of human flourishing.³⁶

UBI proposals predate the advent of the automation discourse. Some trace their origin to Thomas Paine, who argued as early as 1797 that a lump-sum payment should be distributed to all individuals on reaching the age of majority.³⁷ Paine justified this coming-of-age grant along classically Lockean lines: it would enable everyone to participate in market exchange, securing the moral foundations of a private-ownership society. Twentieth-century neoliberal economists supported a basic income for similar reasons. Milton Friedman argued for negative income taxes as a replacement for welfare-state programmes: instead of funding public projects aimed at reducing poverty, each person should be given enough to raise them above the poverty line.³⁸ Today, the most fulsome neoliberal arguments for UBI are to be found in the writings of Charles Murray, who believes it will halt the decline of the West and restore its tired souls to Christian faith and monogamous marriage. The cash—\$1,000 a month—will be freed up by liquidating most of the welfare state.³⁹ Murray's advocacy of UBI stems from his belief that welfare-state institutions are not only economically inefficient but

³⁶ This point is recognized in Dyer-Witheford, *Cyber-Proletariat*, pp. 185–6; Srnicek and Williams, *Inventing the Future*, p. 127; Annie Lowrey, *Give People Money: How UBI Would End Poverty, Revolutionize Work and Remake the World*, New York 2018. p. 130.

³⁷ On Thomas Paine's *Agrarian Justice* (1796), see Van Parijs and Vanderborght, *Basic Income*, pp. 70–2.

³⁸ Milton Friedman, *Capitalism and Freedom*, London 1962, pp. 191–5. See also Friedrich Hayek, *Law, Legislation and Liberty*, vol. 3, London 1979, pp. 54–5.

³⁹ Charles Murray, *In Our Hands: A Plan to Replace the Welfare State*, Washington DC 2016, pp. 11–5; and *Coming Apart*, New York 2012. On Murray's intellectual trajectory, see Quinn Slobodian and Stuart Schrader, 'The White Man, Unburdened', *Baffler*, no. 40, July 2018. It's striking how many liberal and even left proponents of UBI have been influenced by Murray's work. See Brynjolfsson and McAfee, *Second Machine Age*, pp. 234–7; Ford, *Rise of the Robots*, pp. 262–3; West, *Future of Work*, pp. 99–100; Lowrey, *Give People Money*, pp. 128–30. Andy Stern even narrates a fictional conversation between Murray and Martin Luther King: *Raising the Floor*, pp. 202–3.

soul-destroying—entailing the alienation of essential sources of individual meaning-making to the state. He argues that social problems like poverty and drug addiction should be handled directly by the communities in which they arise through ‘voluntary associations’, which UBI would support by providing a social wage sufficient to ensure that no one went hungry, and by dismantling the institutions that presently shoulder these burdens.⁴⁰ In Murray’s vision, UBI would remain fixed at a low level. Further income redistribution would be blocked, so inequality would continue to soar. Murray’s proposal for a UBI is a disturbing vision of how an ever more unequal society, marked by a persistently low demand for labour, might render this situation palatable to the poorer among its members. His platform stands at the base of much of the right-wing automation discourse’s policy proposals.⁴¹ A danger is that, in its implementation, UBI may come to look more like this right-wing version than like left-wing alternatives.

Left-wing UBI proposals would maintain or expand social provision, so their version would be far more expensive. From a centre-left egalitarian position, Philippe van Parijs, perhaps UBI’s most respectable advocate, wants to provide people with enough to meet their basic needs, without dismantling the welfare state. He and Yannick Vanderborght aim at 25 per cent of GDP per capita—roughly \$15,500 per year for each person in the US in 2019. To make this more palatable, however, they recommend starting payments at a very ‘modest level’ and not on a universal basis: there would be a ‘participation condition’, such as a community-service requirement, and eligibility restrictions, to prevent ‘selective immigration’ to UBI countries. The claim is that even small monthly payments will begin to revitalize communities, thereby becoming the basis of a powerful push for higher levels of UBI, or alternatively, for higher wages.⁴²

⁴⁰ Murray, *In Our Hands*, pp. 60–8, 81–90.

⁴¹ See Brynjolfsson and McAfee, *Second Machine Age*, pp. 234–7; Ford, *Rise of the Robots*, pp. 262–3; West, *Future of Work*, pp. 99–100; and Lowrey, *Give People Money*, pp. 128–30.

⁴² See Van Parijs and Vanderborght, *Basic Income*, pp. 11–12, 214, 220–4, 127–8; see also Erik Olin Wright, *How to Be an Anti-Capitalist in the 21st Century*, London and New York 2019, pp. 74–5. For an earlier version of this argument, see Stanley Aronowitz et al., ‘The Post-Work Manifesto’, in Stanley Aronowitz and Jonathan Cutler, eds, *Post-Work: The Wages of Cybernation*, London 1998.

Meanwhile, for anti-capitalist automation theorists like Nick Srnicek and Alex Williams, UBI opens the more radical possibility of facilitating a painless shift towards full unemployment—to life beyond wage labour.⁴³ As automation advances, the value of the UBI will rise until the power to purchase most goods and services is provided by this alternative distribution mechanism—a radical advance in equality. In *Inventing the Future*, UBI is held up as a way to accelerate the transition to a fully automated world, since a high minimum-income floor will empower workers to refuse work, which in turn incentivizes employers to make jobs enjoyable, or to automate them out of existence.⁴⁴ UBI thus becomes a means not of stabilizing the late-capitalist economy, but of pushing towards a post-scarcity world, in which the ‘economic problem’ has been solved and people are free to pursue their passions. Past that point, the major questions concern humanity’s ultimate horizon. Does freedom from work mean indulging in hobbies, as Keynes imagined, or building spaceships and exploring the stars?⁴⁵

Limitations

In its egalitarian forms, UBI has many attractive aspects. Even a minimal net redistribution can be welcomed on its own terms, above all if it goes some way to alleviate the stress of poverty and its associated mental and physical ailments. Combined with a global carbon tax, UBI could play a role in mitigating climate change, providing a partial panacea for the job losses incurred through a transition to renewables.⁴⁶ To evolve from a technocratic fix to an emancipatory project, however, UBI would have to do more: it would have to empower individuals to fight for dramatic social change.

⁴³ Srnicek and Williams, *Inventing the Future*, pp. 107–27.

⁴⁴ Srnicek and Williams, *Inventing the Future*, pp. 117–23. For the original version of this argument, see Robert J. van der Veen and Philippe van Parijs, ‘A Capitalist Road to Communism’, *Theory and Society*, vol. 15, no. 5, 1986. See also Frase, *Four Futures*, pp. 54–8.

⁴⁵ Keynes, ‘Economic Possibilities for Our Grandchildren’ (1930), in *Essays in Persuasion*, London 1963, pp. 366–7; West, *The Future of Work*, pp. 83–8. See also Saadia, *Treconomics*, as well as Iain M. Banks’s *Culture Series*. The popularity of the ‘fully automated luxury communism’ meme speaks to this appealing vision.

⁴⁶ Alyssa Battistoni, ‘Alive in the Sunshine’, *Jacobin*, 12 January 2014; Van Parijs and Vanderborght, *Basic Income*, pp. 227–30.

There are reasons to doubt that UBI will have that effect. To begin with the flourishing communities that UBI proponents invoke: in itself, giving people money will not revitalize communities. As Marx and Engels argued in the *Communist Manifesto*, the expansion of the cash economy tends to melt ‘all fixed, fast-frozen relationships’ into air. This is because money allows people to meet their needs without relying on the communities of which they form a part; it therefore tends to erode their collective organizational capacities. Today, transportation, entertainment and nourishment have been entirely reshaped in line with this inner logic of market economies. People spend hours a day in traffic on their way to and from work—together but fundamentally alone—eating McDonalds and watching cat videos on their phones. Economies already designed to reduce everyone to an atomic existence could easily accommodate a UBI. What of the further claim that a UBI would empower workers in confrontations with their bosses? This is putting the cart before the horse: in order to win a UBI large enough to alter social relations, workers would first need to be empowered. A still deeper concern is that, even if UBI did give people a greater capacity to stand and fight, it is not clear that it presents a viable pathway toward broader emancipatory goals.

For UBI to serve as the basis of a left-wing vision of exit from capitalism, the automation theorists’ analysis would need to be correct: today’s persistently low labour demand would have to originate in rapidly rising productivity levels, associated with a fast pace of economic change. Were that the case, the main issue society would confront would be rising economic inequality, which would be rectified by distributing more and more income as UBI payments, rather than as wages. If instead, as I have argued, contemporary under-demand for labour is the result of global overcapacity and depressed investment—driving down rates of overall economic growth—then waging such a distributional struggle would quickly become a zero-sum conflict between labour and capital, blocking or at least dramatically slowing progress towards a freer future. As such, we would need a plan for wresting control over the economy away from asset owners, yet UBI proposals say little about how to reduce capital’s sway over production.

While a UBI has the laudable goal of separating the income people get from the amount of work they do, it would do nothing to alter the relation between income and assets, keeping us tethered to a system in which interest from extending credit, rent from leasing land or homes,

and profit from running businesses constitute a sizeable fraction of total income. The profit motive would remain the driving force of the economy because capitalists would retain their power over investment decisions, which would continue to determine whether the economy grows or shrinks. Capital would thus continue to wield the weapon of the *capital strike*, i.e. the prerogative of owners of capital to throw society into chaos via disinvestment and capital flight.⁴⁷ For forty years, in an environment of worsening overcapacity and slowing economic growth, capitalists have threatened the use of this weapon to force political parties to capitulate to their demands: for looser business regulations, laxer labour laws, and, in the midst of economic crises, for private bailouts and public austerity.

A left that wants to use UBI to usher in a different sort of world would therefore need to present us with its Meidner Plan, bringing about the progressive socialization of the means of production via a planned transfer of asset ownership to society at large.⁴⁸ The problem is that it was precisely the threat of capital disinvestment during the crisis of the 1970s that led to the original Meidner Plan in Sweden being cast aside. Such a plan would be even harder to realize today, when mass working-class organizations are much weaker and economic growth slower. Given this context, in which a capital strike would quickly push the economy deeply into crisis, we need to set our sights higher: on the conquest of production. Taking the power to control investment decisions away from capitalists and rendering the capital strike inoperative forms an essential precondition of our collective progress toward a post-scarcity future.

3. NECESSITY AND FREEDOM

Even if we doubt automation theorists' account of technological progress—as I certainly do—the attempt to imagine and chart a path toward a post-scarcity future remains an attractive and valuable aspect

⁴⁷ See James Crotty, 'Post-Keynesian Economic Theory: An Overview and Evaluation', *American Economic Review*, vol. 70, no. 2, 1980, p. 25; Adam Przeworski, 'Social Democracy as Historical Phenomenon', *NLR* 1/122, July–August 1980, pp. 56–8; Jonathan Levy, 'Capital as Process and the History of Capital', *Business History Review*, vol. 91, no. 3, 2017.

⁴⁸ See Bertram Silverman, 'The Rise and Fall of the Swedish Model: Interview with Rudolf Meidner', *Challenge*, vol. 41, no. 1, 1998.

of the left-wing automation discourse, allowing us to pose the question of how the pieces of this defunct world can be reassembled to break through to a new mode of social existence. Harboursing a vision is crucial to reviving an emancipatory project today, not least because its future realization seems so far away. Nineteenth-century socialists knew they were far from achieving their goals, but they were nevertheless possessed by an idea of a freer future which animated their struggle. As late as 1939, Brecht could still write: ‘our goal lay far in the distance / it was clearly visible’.⁴⁹ Few would say that today. Not only are we living in an era of stubbornly entrenched neoliberalism, provoking angry ethno-nationalisms and climate-induced catastrophes of growing frequency and scale, we also lack a concrete idea of a real alternative. Centralized state planning turned out to be both economically irrational and ecologically destructive, filling warehouses with shoddy products and proving susceptible to autocratic bureaucratization. European welfare states and Keynesian full-employment policies proved unable to adapt to a context of slowing growth and ongoing deindustrialization.⁵⁰

This is one reason why socialist reforms have given way to neoliberal ones, while emancipatory social movements have mainly been limited to rear-guard defences, which will merely slow our slide into the abyss. So, ‘demand the future’ indeed, but which one? It is striking that *Star Trek: The Next Generation* provides the go-to example of a freer future for so many automation theorists. In this series-reboot from the late 1980s, a technology called the ‘replicator’—essentially an amazingly advanced three-dimensional printer—brings about the end of economic scarcity, allowing people to live in a world without money or markets.⁵¹

⁴⁹ Bertolt Brecht, ‘To Those Born After’, in *The Collected Poems of Bertolt Brecht*, London 2019, p. 736.

⁵⁰ On the limits of actually existing welfare states, as explained by one of their great defenders, see Gøsta Esping-Andersen, *The Three Worlds of Welfare Capitalism*, Princeton 1990, pp. 9–34.

⁵¹ See Ford, *Rise of the Robots*, pp. 246–8; Yang, *War on Normal People*, p. xvii; Frase, *Four Futures*, pp. 48–9. For an extended discussion, see Saadia, *Treconomics*, pp. 65–86. This vision may have found its inspiration in the USSR. In 1961, Khrushchev called for communism in 20 years. Sci-fi duo the Strugatsky brothers penned a series of incredible short stories in response entitled *Noon: 22nd Century* (1961), describing space exploration in a communist future. Alongside their later novel, *Hard to Be a God* (1964), this vision of space-faring communists perhaps served as a model for *Star Trek* and for Bank’s *Culture Series*, both of which premiered in 1987.

The question is: can we envisage a post-scarcity world without the replicators—that is, even if full automation turns out to be a dream?

By side-lining the conquest of production as a goal, automation theorists have largely abandoned what has been seen as the basic precondition for generating a post-scarcity world, from Thomas More's 1516 *Utopia* to present-day Treknomics: not the free giving of money, as the automation theorists have it, but rather the abolition of private property and monetary exchange.⁵² One of the reasons for their relinquishing this key objective is that they tend to begin from the wrong transitional questions: starting from the assumption that full automation will be achieved, they go on to ask how we would need to transform society in order to save humanity from the mass joblessness it would cause and create a world of generalized human dignity. But it is possible to reverse this thought experiment, so that instead of presupposing a fully automated economy and imagining the possibilities for a better and freer world created out of it, we begin from a world of generalized human dignity and then consider the implications for technical change in working to realize that world.

What if everyone in the world suddenly had access to enough health-care, education and welfare to reach their full potential? A world of fully capacitated individuals would be one in which every single person could look forward to developing their interests and abilities with full social support. What would have to change in the present for this future scenario to materialize? In a fully capacitated world, everyone's passions would be equally worthy of pursuit. Particular individuals would not be assigned to collect garbage, wash dishes, mind children, till the soil or assemble electronics for their entire lives, just so others could be free to do as they please. Instead of pushing some people down 'under the mudsill' in order to raise up the rest, as the South Carolina slave owner James Henry Hammond once put it, we would need to find another way to allocate the necessary labours that serve as the foundation for all our other activities.⁵³

⁵² Thomas More, *Utopia*, 2nd edn, London 2014, pp. 47, 132.

⁵³ For Hammond's 1858 mudsill theory, which claimed it was necessary to have slaves for drudgery, so the rest of society could be raised above the muck, see Elizabeth Anderson, *Private Government*, Oxford 2017, pp. 30–1. See also W. E. B. Du Bois's evocative response to the mudsill theory in *Darkwater: Voices from Within the Veil*, Mineola 1999.

Whereas automation theorists place their hopes in technology, many of the original theorists of post-scarcity—such as More, Cabet, Marx, Kropotkin—did not need to call on a *deus ex machina* to solve this riddle. They claimed that post-scarcity was possible without the full automation of production. Instead, we needed to conceive of social life as comprising a realm of necessity and a realm of freedom.⁵⁴ In the former, we would share out the labours necessary for our collective reproduction, dividing up responsibilities while taking into account individual abilities and proclivities. Some tasks would need to be performed locally, but many could be planned on a regional or global scale. Of course, much necessary work is difficult to share out widely because it requires specialized skills: we would still need farmers, construction workers, surgeons, electricians and machinists—though in a fully capacitated world, these specialisms would themselves be more evenly distributed. Perhaps, alongside a common rotation, each individual would choose a vocation that would be added to their responsibilities.

The result of such work-sharing would be that more people, including those currently cast aside as redundant workers, would participate in necessary work, and so the amount any one person had to do would be correspondingly reduced. In order to share these necessary labours at all, however, their character would need to be transformed. Social distinctions between waged and unwaged work, which have historically consigned women to the ‘hidden abode’ of household production, would have to be abandoned. Moreover, production and consumption would need to be conceived as a closed loop, rather than endpoints cut off from other social-ecological considerations.⁵⁵

⁵⁴ See More, *Utopia*, pp. 60–72; Etienne Cabet, *Travels in Icaria*, Syracuse 2003, pp. 80–9; Karl Marx, *Grundrisse: Foundations of a Critique of Political Economy*, London 1993, pp. 707–12; Karl Marx, *Capital*, vol. 3, London 1991, pp. 958–9; Peter Kropotkin, *The Conquest of Bread*, London 2015, pp. 99–112. For a general discussion, which, however, excludes Cabet and Kropotkin, see Edward Granter, *Critical Theory and the End of Work*, Farnham 2009, especially pp. 31–67. Here I leave to one side thinkers like Charles Fourier, William Morris and Herbert Marcuse who essentially suggested that the collapse of spheres could be achieved by turning all work into play. Single-realm conceptions of a post-scarcity world are, in my view, both totalitarian and hopelessly utopian.

⁵⁵ ‘Putting an end to garbage collection as a job some have to do for years, will be a lot more than job rotation: it will imply changes in the process and logic of garbage *creation* and disposal’: Gilles Dauvé, *Eclipse and Re-Emergence of the Communist Movement*, Oakland 2015, p. 54.

How a fully capacitated humanity would then set about further transforming their common labours becomes an open question. Here, it is important to recall that the technologies developed in capitalist societies are not neutral: they are designed to embody capitalist control, not to free humanity from drudgery; we probably have the technological capability to make many tasks more enjoyable than they currently are. Technical know-how might be applied to break down distinctions between skilled and unskilled labour, or to eliminate some kinds of labour altogether. Such questions would be settled by human beings freely and collectively figuring out what they wanted to do, rather than decided for us by supposedly unstoppable technological forces.⁵⁶

Note that what I am here calling necessary or reproductive labour is not necessarily unsatisfying work, especially if it is apportioned in such a way that no one's working life is entirely dominated by it. Minding children, for example, is not only good for children, but for adults too, opening them to the wonders of a child's experience of the world; likewise, making dinner or washing dishes, when done collectively, can facilitate the forming or deepening of relationships. Whether a fully capacitated humanity would prefer such activities to be performed by food replicators and cleaning drones, so people can get on with their scientific research unimpeded, remains to be seen.

In the post-scarcity tradition, the reorganization of necessary labours makes possible a world of free giving. Everyone can go to the social storehouses and service centres to get what they need, while—as More put it—'giving absolutely nothing in exchange'.⁵⁷ All are entitled to food, drink, clothes, housing, healthcare, education and to means of transportation and communication, irrespective of their contribution to the labour of necessity, 'just as all men' are 'entitled to warm themselves in the heat of the sun'—although ecological sustainability would set constraints on their provision.⁵⁸ Literal abundance is not required so long

⁵⁶ Instead of ending our social obligations to one another, as the automation theorists think possible, the point is to recognize and transform them—to dis-alienate communities rather than be done with them—as a way to ensure that individual freedom is shared equally and by all. This is not to champion drudgery and its associated work ethic, but to recognize that drudgery is unlikely to go away.

⁵⁷ More, *Utopia*, pp. 67–8. See also Kropotkin, *Conquest of Bread*, pp. 58–63.

⁵⁸ James Boggs, 'The American Revolution' [1963], in Stephen Ward, ed., *Pages from a Black Radical's Notebook: A James Boggs Reader*, Detroit 2011, p. 110.

as scarcity and its accompanying mentality are overcome, so that people can 'live with a joyful and tranquil frame of mind, with no worry about making a living'.⁵⁹ Indeed, according to this perspective, abundance is not a technological threshold but a social relationship, undergirded by the principle that one's means of existence will not be at stake in any of one's relationships. Likewise, in a post-scarcity world, there could still be sanctions to ensure the necessary work is actually undertaken. These would take the form not of threats of starvation and exclusion, but of invitations to cooperation.⁶⁰

For theorists of post-scarcity, this reconstruction of the realm of necessity is not an end in itself; the solidarity it engenders also expands the realm of freedom, and ensures this too is shared by all.⁶¹ Under these conditions, once necessity is assured, everyone is free to develop their individuality, outside the bounds of any given community. The point is to enable by way of a collective social project what the automation theorists hope to achieve technologically. Of course, the realm of freedom is about time for both socializing and solitude, for both engaging in hobbies and doing nothing at all—'*rien faire comme une bête*, lying on water and looking peacefully at the sky'.⁶² Adorno's phrase is suggestive of a world in which dispossession and the existential insecurity to which it gives rise have been universally abolished. None of this requires that we assume a spontaneous harmony of interests, or a benign human nature. On the contrary, ending economic compulsions implies that many people will be free to withdraw from oppressive personal relationships within households or workplaces, or to re-negotiate their terms.

⁵⁹ More, *Utopia*, p. 130.

⁶⁰ Economists have long recognized that hunger is not a good motivator: 'the best situation for man is when he produces in freedom, has choice in his occupations, has no overseer to impede him, and when he sees his work bring a profit to himself and others like him', with the result that 'well-being has always been the most powerful stimulant to work': Kropotkin, *Conquest of Bread*, pp. 138–9.

⁶¹ In that sense, 'equality enables—rather than detracts from—individualism': Kristin Ross, *Communal Luxury: The Political Imaginary of the Paris Commune*, London and New York 2015, p. 108. Ross's text evokes a form of 'luxury communism' that need not be 'fully automated'. See also More, *Utopia*, pp. 61–2; Marx, *Grundrisse*, pp. 711–2; Marx, *Capital*, vol. 1, pp. 532–3; and Kropotkin, *Conquest of Bread*, pp. 99–112.

⁶² Theodor Adorno, *Minima Moralia: Reflections from Damaged Life*, London and New York 2005, p. 157.

What will people do with their expanded free time? Post-scarcity has been called ‘post-work’, but such a perspective is inadequate.⁶³ Reorganizing social life to reduce the role of necessary labour is not about overcoming work as such; it is about freeing people to pursue the sort of activities that cannot be described simply as either work or leisure. That might include painting murals, learning a language, building water slides—or discovering new ways to do common tasks to make them less time-consuming. It could mean writing novels, or self-reinvention through education or exploration. As automation theorists of both right and left envisage, the end of scarcity would enable many to enter into voluntary agreements and associations with others from all over the globe: joining consortia of mathematical researchers, clubs for inventing new musical instruments, or federations for building spaceships. ‘Creative minds and scientific aptitudes’ would no longer be ‘wasted due to accidents of birthplace, the bad luck of challenging circumstances, or the necessity to survive’.⁶⁴ Funding for research or art would also no longer be determined by the profit motive, or dictated by the interests of the wealthy.

How would people gain access to the resources they need to pursue their passions in the realm of freedom? Presumably many of these could be developed within the realm of freedom itself, through voluntary associations, and federation among them.⁶⁵ But these issues—as well as the related question of what counts as necessity and what as freedom—would be matters for a freed humanity to resolve for itself, politically. The world would be composed of overlapping partial plans, rather than a single central plan—a possibility within our grasp through the new digital means of communication.⁶⁶ Within this framework, one could

⁶³ See Aronowitz et al., ‘Post-Work Manifesto’.

⁶⁴ Saadia, *Treconomics*, p. 61.

⁶⁵ One might imagine that the realm of necessity would in some respects continue to function like a capitalist economy, with its attendant pressures to raise productivity, reduce labour time and re-allocate resources. However, without labour or other factor markets, it is more likely that the realm of necessity would change slowly, absorbing innovations from the realm of freedom over time. The practical implementation of these innovations might take a long time, requiring coordination among various committees that would likely be more concerned with getting chores done, than doing them better. In that case, the realm of freedom would be the one giving rise to dynamic transformation.

⁶⁶ See Evgeny Morozov’s discussion of Daniel Saros’s *Information Technology and Socialist Construction* (2014) in ‘Digital Socialism?’, NLR 116/117, March–June 2019.

imagine fully capacitated individuals arranging themselves in all sorts of ways: people might live in large communities or small ones; they might do a lot of work or a little, choosing instead to explore nature, society, their minds, the oceans or the stars; they might be happy on a hot planet or a cool one; in a world of relative resource scarcity or abundance—as long as certain fundamental conditions of sustainable material security were met.⁶⁷

The point of this exercise is to show that it is possible to design utopian thought experiments that revolve around and prioritize people, not technological progress. Recognizing the fundamental dignity of the seven billion-plus who make up humanity requires that we no longer agree to relegate some to a life of drudgery so that others may be free. It means sharing out the work that remains to be done in a technologically advanced society so that everyone has the right and the power to decide what to do with their time.

Agents of change

This brief sketch of a post-scarcity world can perhaps serve as a benchmark to evaluate the various pathways that are supposed to get us to that place. From this standpoint, it is clear that nothing about the way our world is presently organized will automatically lead there. Life expectancies, education levels and degrees of urbanization have risen dramatically over time, yet they remain highly unequal. Meanwhile, even in the richest countries most people are so atomized, materially insecure and alienated from their collective capacities that their horizons are stunted. If full automation can appear as both a dream and a nightmare, that is because it has no innate association with human dignity, and will not generate a post-scarcity world by itself. Nor will UBI. Perhaps if access to education and healthcare were dramatically widened, communities revitalized by cooperatively sharing the work necessary to their reproduction, and industries partially socialized, then a basic income could form one part of a larger project aiming at human freedom.⁶⁸ But the

⁶⁷ For an account of utopia amidst scarcity, see Ursula K. Le Guin, *The Dispossessed: An Ambiguous Utopia*, New York 1994, as well as Fredric Jameson's commentary on 'world reduction' in Le Guin's novels in *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions*, London and New York 2007, pp. 267–80. See also Frase, *Four Futures*, pp. 91–119.

⁶⁸ Most UBI theorists end up admitting this point. See, for example, Van Parijs and Vanderborght, *Basic Income*, p. 246.

path to a post-scarcity world could also take some other form entirely. Without a vision of this world, it is easy to get lost along the way.

If a post-scarcity world is not the inevitable product of technological advancement or technocratic reforms, then it can only come about under the pressure of social movements pushing for a radical restructuring of social life. One of the most disappointing aspects of the automation discourse is its tendency to underrate existing social struggles. In their 1985 article, ‘A Capitalist Road to Communism?’, Robert van der Veen and Philippe van Parijs supposed that, as ‘rapid labour-saving technical change’ combined with ‘constraints on economic growth’, rational human action ‘can be relied upon to generate, sooner or later’ forces demanding and implementing social change. Writing thirty years later, Nick Srnicek and Alex Williams despair of the forces that have been generated, which they describe as mere ‘folk politics’: people are reacting to the increasing complexity of the modern world, they say, by demanding a return to the simplicity of local communities engaging in face-to-face interactions.⁶⁹

Despair of the emancipatory potential of today’s social struggles is not unreasonable. It would take a massive and persistent mobilization to turn the tide of a truculent neoliberalism, yet the only movement with the size and strength to undertake this task—the historic labour movement—has been thoroughly defeated. Strikes and labour demonstrations are mainly defensive: workers fight to slow the pace of capital’s juggernaut and its drive for more austerity, labour flexibility and privatization, in response to an economic slowdown that never ends. The labour movement has never figured out how to respond to technologically induced job loss under conditions of slowing economic growth. As Wolfgang Streeck put it, ‘disorganized capitalism is disorganizing not only itself but its opposition as well’.⁷⁰ For this reason, the long descent into economic stagnation has not been accompanied by a renewal of mass working-class organizations.

Nevertheless, over ten years on from the 2008 crisis, political stasis appears to be cracking. Social struggles have unfolded on a scale not seen for decades. There have been waves of strikes and social movements

⁶⁹ Van der Veen and Van Parijs, ‘A Capitalist Road to Communism?’, pp. 652–3; Srnicek and Williams, *Inventing the Future*, pp. 9–13.

⁷⁰ Wolfgang Streeck, ‘How Will Capitalism End?’, *NLR* 87, May–June 2014, p. 48.

across five continents, from China to North Africa, Argentina to Greece, Indonesia to the US.⁷¹ Masses of people are once again joining work stoppages, occupations, blockades, riots and demonstrations, protesting against the morbid symptoms of a long-term decline in the demand for labour—inequality, employment insecurity, government corruption and austerity measures, as well as food, energy and transportation price-hikes. Protestors have come out *en masse* in response to police murders, which sparked the rage of those who would no longer stand for their lack of social recognition. To be sure, these explosive movements have so far lacked the staying power to force recalcitrant governments into retreat and have suffered reversals and defeats. But they have nevertheless broadened political horizons and radicalized a new generation of militants. Perhaps our era is like the mid-19th century—producing utopian visionaries, but also generating new constituencies for emancipatory social change. Objective features of the present period support this hypothesis: ours is the healthiest, most broadly educated, most urban and most connected population in world history. Literate and mobile people ‘will not accept a future of high inequality and stagnant growth’ on a planet with rising sea levels.⁷² Whether this will bring us closer to a freer future is an open question.

What is certain is that if the social movements of the present period do take hold as more permanent formations, they are unlikely to look like the labour movements of the past. Vast discontinuities separate our era from that time. The labour movements arose during a long period of industrialization, whereas we live in the post-industrial doldrums: ours will be a struggle over the consequences of industrialization’s end. This is not to deny the global economy’s continuing dependence on industrial production, or the existence of factory workers. But the declining share of manufacturing in total employment means that these workers no longer have the capacity to cast themselves as representatives of a more just and rational future order. Even countries like South Africa, South Korea and Brazil, which industrialized only recently and where manufacturing

⁷¹ Among texts that attempt to take stock of these movements as a whole, see Paul Mason, *Why It’s Still Kicking Off Everywhere: The New Global Revolutions*, London and New York 2013; Manuel Castells, *Networks of Outrage and Hope: Social Movements in the Internet Age*, 2nd edn, Cambridge 2015; Zeynep Tufekci, *Twitter and Tear Gas: The Power and Fragility of Networked Protest*, London 2017; Endnotes, ‘The Holding Pattern’, *Endnotes* 3, 2013; and Göran Therborn, ‘New Masses?’, *NLR* 85, Jan–Feb 2014.

⁷² Paul Mason, *Postcapitalism: A Guide to Our Future*, London 2015, p. 29.

workers were pivotal in the struggles for democracy in the 1970s and 80s, have long become majority service-sector economies.⁷³

This change in the composition of the labour force will reshape social movements today in essential respects. Though automation discourse tends to over-emphasize this trend, it is true that direct human labour plays a much smaller role in the core industries than it did before; as Marx predicted, it has largely been displaced as the primary productive force by scientific and technical knowledge, embodied in vast infrastructures mobilizing both natural forces and machines. Many workers have been cast aside, forced to give up much of their waking lives to dead-end service jobs in which labour productivity rises slowly. The dynamic struggles that animated earlier generations of workers over who should benefit from continual productivity growth therefore fail to take place. For most workers today, capital's compulsion to drive down production costs means only labour intensification without corresponding increases in pay.

Commentators have argued that however disaffected insecure workers become, they lack the power at the point of production necessary to press their demands.⁷⁴ Yet, as it turns out, in a world of lean, just-in-time production, organizing to blockade circulation in and around major cities can prove an effective tactic. An early example was given in the *piquetero* movement in Argentina: unemployed workers blockaded highways around Buenos Aires to demand better benefits.⁷⁵ Since 2011, this tactic has been sporadically adopted by workers in the US, France, Egypt and elsewhere.

In the autonomous spaces that can open up in the course of major struggles, questions of the nature and future of society are posed. Assemblies are generally open to all. Personal and intimate forms of coercion are not altogether absent, but there is a shared sense that everyone deserves a say in social affairs. Within occupations and on the frontlines of blockades, people do actually care for one another. They cook and clean and look after the children without expecting anything in return, although

⁷³ See Gay Seidman, *Manufacturing Militance: Workers' Movements in Brazil and South Africa, 1970–1985*, Berkeley 1994.

⁷⁴ See, for example, Kim Moody, *On New Terrain: How Capital is Reshaping the Battleground of Class War*, Chicago 2017.

⁷⁵ See Federico Rossi, *The Poor's Struggle for Political Incorporation: The Piquetero Movement in Argentina*, Cambridge 2017.

of course the materials they use to perform these tasks have generally been purchased within the normal course of the life they seek to disrupt by their actions. Such efforts do not merely indicate a cleaving towards a simpler life—whether in folk or *völkish* terms. Instead they point, however fitfully, towards a world of generalized human dignity, one with fewer borders and boundaries.

No matter how large they become, these protests have so far been unable to escape the limits of all struggles over the collective reproduction of the working class, whose deterioration, under the pressures of stagnating wages, employment insecurity and welfare-state retreat, has been extreme. These movements fail to rise from the level of *reproduction* to that of *production*, even when they call forth and combine with strikes in what remains of the industrial core. However much hope they inspire amidst the catastrophe of the present, mass, disruptive protests in our era have so far lacked a vision of a wholly different world—one in which the infrastructures of capitalist societies are brought under collective control, work is reorganized and redistributed, scarcity overcome through the free-giving of goods and services, and our human capacities correspondingly enlarged as new vistas of existential security and freedom are opened up.

Unless social struggles organize themselves around these historic tasks, they will not break through to a new synthesis of what it means to be a human being—in a world devoid of poverty and billionaires, of stateless refugees and detention camps, and of lives spent in drudgery that hardly offers a moment to rest, let alone dream. Movements without a vision are blind; but visionaries without movements are much more severely incapacitated. Without a massive social struggle to build a post-scarcity world, late-capitalist visionaries will remain mere techno-utopian mystics.