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Automation, Augmentation, Autonomy: Labour Regulation and the Digital Transformation of Managerial Prerogatives

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I. Introduction

Technologies together represent a constitutive component of modern societies, which is why their multifarious impacts have long been at the centre of scholarly and popular discourses. Understandably, their emergence has prompted both rosy expectations and justified anxieties. In addition to permeating almost all aspects of human life, digital advances are significantly altering workplace interactions and reshaping industrial processes.

The world of work is arguably one of many areas in which the influence of new technology is increasingly tangible. Over the last few years, workers in all sectors have witnessed the frantic acceleration of the digital transformation, which has been further exacerbated (if not validated) by the Covid-19 pandemic necessitating the reorganisation of production methods while contributing to the widespread adoption of digital solutions intended to enable business continuity, facilitate remote working arrangements and keep people safe.[1] Both during the most severe phases of the Covid-19 lockdowns and after the related restrictions were relaxed, the penetration of digital applications continued to reach astonishing peaks, corroborating their role as 'privatised utilities' for workers, employers and public institutions alike.[2] Yet, the relevance

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[1] A Gilbert, A Thomas, S Atwell and J Simons, *The Impact of Automation on Labour Markets: Interactions with Covid-19* (London, Institute for the Future of Work, 2020). See also A Aloisi and V De Stefano, 'Essential Jobs, Remote Work and Digital Surveillance: Addressing the COVID-19 Pandemic Panopticon' (2022) 161 *International Labour Review*, available at www.onlinelibrary.wiley.com/doi/10.1111/ilr.12219.

[2] JY Chen and JL Qiu, 'Digital Utility: Datafication, Regulation, Labor, and DiDi's Platformization of Urban Transport in China' (2019) 12 *Chinese Journal of Communication* 274.

of digital automation was prominent well before the pandemic struck. This exogenous event could, therefore, serve as a litmus test of the soundness of theories concerning human substitution, expanded managerial powers, skill displacement and efficiency enhancement.

All too often, the seismic shifts brought about by digital infrastructure are considered through the distorting prism of utopian or dystopian ideologies, which in some cases privileges beliefs over facts due to the adoption of a rather polarised approach. During several epochs, the consequences of this attitude have materialised in the form of short-sighted policy measures, dysfunctional company rulebooks and misguided regulatory interventions, which all fail to offer concrete responses to radical changes. Although firmly anchored in employment law, this chapter contributes to the literature by disentangling the main trajectories of the digital transformation at the workplace level from a cross-disciplinary perspective. More specifically, the analysis concentrates on the three main vectors of the digital transformation, namely smart machines, algorithms and online platforms. These transformative forces affect the full array of options available to entrepreneurs: the potential dislocation of tasks and jobs, opportunities for outsourcing, digitisation of decision-making processes, augmentation of command-and-control roles and impact on job quality and task discretion.[3] By distinguishing between hype and reality, the goal of this chapter is to reassess the influence of technological means on the basis of a three-pronged scenario comprising the following complementary possibilities: (i) automation, (ii) augmentation and (iii) autonomy.

A. Game-Changing Technologies and the World of Work

A comprehensive definition of 'game-changing technologies' that includes material gadgets and immaterial infrastructure will be embraced in this chapter.[4] There is no denying that such tools are highly heterogeneous in terms of their usages and purposes, as are the reasons behind their introduction. Despite this, they enable the reconfiguration of organisational procedures, workplace practices, skills acquisition, retention and enhancement. Consequently, rather than dissecting each distinct means, an examination of technological artefacts should necessarily include a deep dive into the benign or harmful alterations they can make to the (already unbalanced and asymmetric) power relationship between bosses and workers.

Before proceeding any further, a note of caution must be sounded. It is debatable whether the current period really deserves such tantalising labels as the 'Second Machine Age' or 'Fourth Industrial Revolution'.[5] Labour historians have almost unanimously linked the previous industrial revolutions to enabling engines associated with

[3] In this chapter, the term 'augmentation' is used to describe the expansion of employer powers. In other fields, it is considered to be a value-added alternative to automation. S Raisch and S Krakowski, 'Artificial Intelligence and Management: The Automation–Augmentation Paradox' (2021) 46 *Academy of Management Review* 192.

[4] Eurofound, *Game-Changing Technologies: Transforming Production and Employment in Europe* (Luxembourg, Publications Office of the European Union, 2020).

[5] E Brynjolfsson and A McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (New York, WW Norton & Company, 2014).

profound change, including in relation to the social fabric.[6] Without dwelling on the matter too much, changes are periodised according to the main disrupting force that determined the redesign of production, distribution and consumer attitudes.[7] Thanks to steam engines and railways, a transition occurred from manual to mechanised production methods, which boosted coal-powered manufacturing (from the end of the eighteenth to the beginning of the nineteenth century, a period known as the 'First Industrial Revolution'). Then, at the end of the nineteenth century, steel, electricity and heavy engineering facilitated the shift to mass production based on a stricter division of labour, which defines the second stage of this progression. Finally, the 'Third Industrial Revolution' commonly refers to the first wave of the automation and computerisation of production cycles thanks to newly invented tools such as microprocessors in the information and communication technology (ICT) arena during the 1970s.[8]

Scholars have expressed strongly diverging views, but to paint as accurate a picture of the current landscape as possible, it is important to consider what machines, algorithms and platforms have in common with the forces redesigning human history, which have previously been used to classify industrial shifts.[9] The most critical underlying asset related to these new technologies is data, particularly personal data,[10] without which new technologies could not operate in such efficient and effective ways. Indeed, 'big' or 'smart' data capture, storage and processing now constitute the backbone of digital operators' strategies, ensuring sustained exponential advances in reprogramming business models and redeploying complex activities due to the high availability of data-collecting devices and enhanced computational power.[11] As will be discussed later in this chapter, the 'datafication' of employment relationships is also a precondition for the magnification of managerial prerogatives.[12] The other significant characteristic considered to indicate that an inflexion point of unprecedented progress has occurred, at least in the Global North, could be the peculiar capacity of the current wave of digitalisation to be re-combinatory, self-reinforcing and interconnected.[13]

[6] D Acemoglu and JA Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (New York, Crown Publishing Group, 2012).

[7] N von Tunzelmann, 'Historical Coevolution of Governance and Technology in the Industrial Revolutions' (2003) 14 *Structural Change and Economic Dynamics* 365.

[8] M Castells, *The Information Age: Economy, Society, and Culture* (London, Blackwell Publishers, 1996).

[9] EG Popkova, YV Ragulina and AV Bogoviz, 'Fundamental Differences of Transition to Industry 4.0 from Previous Industrial Revolutions' in EG Popkova, YV Ragulina and AV Bogoviz (eds), *Industry 4.0: Industrial Revolution of the 21st Century* (Cham, Springer, 2019) 21. See also E Macias, D Klenert and JI Anton, 'Not So Disruptive Yet? Characteristics, Distribution and Determinants of Robots in Europe' (2021) 58 *Structural Change and Economic Dynamics* 76.

[10] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1, Article 4(1).

[11] D Angrave, A Charlwood, I Kirkpatrick, M Lawrence and M Stuart, 'HR and Analytics: Why HR Is Set to Fail the Big Data Challenge' (2016) 26 *Human Resource Management Journal* 1.

[12] PV Moore and J Woodcock (eds), *Augmented Exploitation: Artificial Intelligence, Automation, and Work* (London, Pluto Press, 2021). See also S Adler-Bell and M Miller, *The Datafication of Employment: How Surveillance and Capitalism Are Shaping Workers' Futures Without Their Knowledge* (New York, The Century Foundation, 2018).

[13] E Brynjolfsson and A McAfee, *Race Against the Machine* (Lexington, Digital Frontier Press, 2012). See also SG Leonhard, *Technology vs Humanity: The Coming Clash Between Man and Machine* (London, Fast Future Publishing, 2016).

Parallel to previous industrial revolutions, new modes of production have complemented or supplanted some activities while purportedly increasing efficiency, minimising transaction costs and catering to evolving customer appetites. There is more. Similar to the preceding cases, game-changing technologies give rise to stark tension between the changing social organisation of production and the underlying institutional framework,[14] thereby causing social unease and, possibly, political unrest. This divergence places social institutions and the resultant coordination mechanisms under severe strain, resulting in a situation that has commanded the attention of regulators, social partners and the general public. In short, workplace disruption can be associated with substantial social costs for those directly affected if they are not appropriately compensated. It is undeniable that this alteration in the power equilibria leads to both winners and losers.[15] Consequently, innovations often face resistance and lead to upheaval.[16]

B. Research Hypothesis and Structure of the Chapter

The potential of modern tools is barely comparable to that of ancient practices that were bound by the limitations of the scope, latitude and precision of direct human power.[17] Their magnitude constitutes a challenge for traditional institutions, which often struggle to adapt to new organisational and production patterns. This spectacular turnaround demands that we look at things differently and raises the captivating question of whether employer authority today is the same as it was in the past. There is abundant evidence that advanced technologies are not making humans redundant; rather, they are making workers submissive and managers superfluous.[18] Therein lies the puzzle that has motivated the examination of what I term the 'genetic mutation' of the employer's functions (ie, an exorbitant augmentation of their breadth and reach). This expansion in both the spatial and the temporal scope of hierarchical powers raises issues regarding the adequacy of the existing statutory and collectively agreed upon legal frameworks.[19]

The trajectory of the ongoing work transformation is certainly not a linear one. However, it would be wrong not to recognise the role of labour regulation in addressing these manifold challenges: technology's evolution is shaped by the legal environment through mutually reinforcing interactions with individual and collective labour regulations.[20] While innovations cannot be uninvented, effectively shaping the ways in which their benefits are shared and their risks mutualised represents a crucial task for all involved supranational and domestic actors.

[14] B Jovanovic and PL Rousseau, 'General Purpose Technologies' in P Aghion and S Durlauf (eds), *Handbook of Economic Growth*, vol 1 (Amsterdam, Elsevier BV, 2005) 1181.

[15] K Crawford, *The Atlas of AI* (New Haven, CT, Yale University Press, 2021).

[16] D Spencer, M Cole, S Joyce, X Whittaker and M Stuart, *Digital Automation and the Future of Work* (Brussels, European Union, 2021).

[17] R Bodei, *Dominio e sottomissione, Schiavi, animali, macchine, Intelligenza artificiale* (Bologna, Il Mulino, 2019).

[18] A Aloisi and V De Stefano, '*Introducing the Algorithmic Boss*' (Madrid, IE Insights, 20 April 2021), available at: www.ie.edu/insights/articles/introducing-the-algorithmic-boss/.

[19] S Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York, Basic Books, 1988).

[20] S Deakin and C Markou, 'The Law–Technology Cycle and the Future of Work' (2018) Cambridge, Centre for Business Research, University of Cambridge, Working Paper No 504.

The remainder of this chapter, which applies an analytical-descriptive approach, is structured into three main sections. The second section debunks the rhetoric of a 'world without work', explaining how a more accurate portrayal of the ongoing transformation would reveal complementarity rather than substitution effects and, more worryingly, the significant potential for quality erosion in relation to several middle-income professional contexts. After providing a thorough overview of the legal and economic functions of both employers and managers, the third section examines the transformation of related prerogatives, as spurred on by the widespread adoption of so-called automated decision-making systems (ADMS), which have the potential to render authority more intense, distributed and deceitful. Prior studies in the organisation, surveillance and human resources management (HRM) fields inform the multidisciplinary examination of the genetic variation of employer prerogatives, a trend that results in the reduction of workers' agency (here defined as freedom of choice with regard to time and place of work as well as the methods used to achieve the objectives set), which may negatively affect productivity, competitiveness and propensity to innovate. By openly opposing the prevailing deterministic approach, the final section engages with the importance of fostering a professional ecosystem in which self-determination is promoted in order to empower workers, attract talent and achieve lasting organisational success.

II. Challenging the 'Workless Future' Narrative

There is arguably only one topic that has been researched as extensively as the 'future of work' and that is the alleged soon-to-be end of work. When conceived as a vector replacing human labour inputs, automation ends up being treated as a job-destroying force. Over the last century, philosophers, sociologists and economists have speculated about the much-vaunted demise of work due to unstoppable technological breakthroughs rendering humans unnecessary. In this field of study, wishful thinking and illusions have often been conflated with reality.

As a source of apprehension and even discontent, this conventional wisdom regarding the threat posed by technologies and their winner-takes-all nature has ample historical precedent. However, claims that human work will shortly disappear require evidence that has not been provided. In the meantime, there is much confusion concerning how to frame the issue from a legal standpoint. Although this ongoing dispute is unlikely to be settled within legal circles, it may severely affect policy responses as well as the way in which regulators design the accompanying measures. For instance, skill obsolescence and enhanced mechanisation could trigger large restructuring operations, the social implications of which ought to be mitigated.[21] Similarly, anticipating the development of new demands could inform reskilling processes. Alternatively, fewer jobs may usher in downward competition in terms of the wages and other conditions associated with the jobs that survive the turbulence. Thus, as suggested by Estlund,[22] employment law

[21] V De Stefano, '"Negotiating the Algorithm": Automation, Artificial Intelligence, and Labor Protection' (2019) 41 *Comparative Labor Law & Policy Journal* 15.

[22] C Estlund, 'What Should We Do After Work? Automation and Employment' (2018) 128 *Yale Law Journal* 254.

scholars cannot afford to ignore the discussion that is currently raging among labour economists and business leaders.

A. Is the Job Destruction Anxiety Exaggerated?

When it comes to tracing the evolution of the unfulfilled prophecy of the jobless society, it is striking that the futurists of work disappearance tended to perceive the available rudimentary technology as a positive force that was expected to free humans from non-meaningful, tedious and menial duties. In short, the coming abundance of machines, gadgets and widgets appeared to promise the liberation of human energies that could be devoted to more rewarding tasks. The seminal voice in this political and economic theorising was that of Keynes, who memorably projected the tremendous convenience of a 15-hour working week by 2030 thanks to inventions purported to suffer on behalf of humans.[23] Technological advances were awaited with a mixture of hope and relief. More recently, in an astonishing and utterly cynical reversal of perspective, ICT progress has been accused of paving the way for a reduction in employment and task immiseration. Over time, this dismal understanding of the ongoing digital transformation has escalated, becoming a widespread mythology.[24] However, massive dislocation has yet to materialise, despite ongoing digital progress. Workers are transferring from declining to fast-growing sectors or concentrating on less routine and skill-intense occupations, while new occupations are absorbing the available labour supply. Undeniably, interim adjustments may prove traumatic. What is worse, the highly perceptible abundance of automation technology is not triggering a corresponding growth in productivity rates.[25] The same applies to wages.

Several commentators rushed to forecast an upsurge in automation during the early phases of the recent pandemic for a panoply of reasons.[26] First, unlike human labour, technology is not affected by dreadful viruses ('robots cannot get sick' was the catchy headline). Second, machines offer the prospect of potentially significant cost-saving for firms. Indeed, it is no mere accident that the same storyline gained traction during previous recessions.[27] Throughout similar exogenous shocks, automation occurred in bursts and was concentrated during times of economic downturn. However, recent data have demonstrated that the current levels of job destruction anxiety are exaggerated.[28] In fact, there is little evidence of growing interest in automation, and even the pandemic has had only a fairly modest impact. It has not intensified the adoption of robots, although aggregate unemployment has risen, while the feasibility of in-person labour

[23] JM Keynes, 'Economic Possibilities for Our Grandchildren' in *Essays in Persuasion* (London, Palgrave Macmillan, 2010) 321.

[24] CB Frey, *The Technology Trap: Capital, Labor, and Power in the Age of Automation* (Princeton, NJ, Princeton University Press, 2019).

[25] RM Solow, 'We'd Better Watch Out' (1987) *New York Times Book Review* 36.

[26] C Coombs, 'Will COVID-19 Be the Tipping Point for the Intelligent Automation of Work? A Review of the Debate and Implications for Research' (2020) 55 *International Journal of Information Management* 102182.

[27] 'Robots Threaten Jobs Less Than Fearmongers Claim' *The Economist* (10 April 2021), available at: www.econ.st/3wECso3.

[28] A Georgieff and A Milanez, 'What Happened to Jobs at High Risk of Automation?' (2021) Paris, OECD Social, Employment and Migration Working Papers No 255, available at: www.bit.ly/32YMLKe.

has been severely compromised.[29] Despite positively altering public attitudes towards the adoption of new technology, mainly in terms of customer mindsets, the pandemic has also made evident the previously overlooked human network that upholds the operation of the digital world.[30] Nevertheless, such preoccupations are not new, and it may be useful to look backwards in order to see forwards.

Catastrophic forecasts regarding the number of jobs that will be lost in the future occupy the pages of myriad bestsellers. This posturing has seemingly prevailed thanks to numerous evocative titles and false alarmist proclamations.[31] Even worse, fuelled by the rhetoric of relentless technological obsolescence, the idea of a 'post-work utopia' has gained widespread recognition,[32] suggesting that breakthroughs in robotics and artificial intelligence (AI) will make it possible to abolish various jobs in the name of cost-effectiveness.[33] Over the last two centuries, there have been periodic warnings that automation and new technologies will wipe out or downgrade large numbers of middle-class jobs while leaving workers at a permanent disadvantage, at least since the Luddites attempted to smash mechanised looms during the nineteenth century after marching on a textile mill in Huddersfield, England.[34] Optimists have highlighted past examples of how technology has improved the human condition, often stressing factories and warehouses as a positive externality. By contrast, scaremongers have fretted about the devastating impacts of new inventions on the intrinsic value of human labour. In the current climate, it appears that technology has turned out to be less favourable to labour than expected,[35] thereby failing to deliver on its promise of making our lives easier. Such a culture of uncertainty may also have played a role in curbing contestation and collective claims. Indeed, anxiety over the magnitude of technological displacement has frequently been weaponised to force workers 'to accept *any* jobs as a means of survival'.[36]

B. A Brief History of Unfulfilled Prophecies

Decades ago, Rifkin claimed that automation and technological progress in the field of agriculture would inevitably lead to work destruction, which would cause soaring unemployment.[37] At the same time, the noted labour economist predicted polarisation

[29] Gilbert et al (n 1).

[30] HR Ekbia and BA Nardi, *Heteromation, and Other Stories of Computing and Capitalism* (Cambridge, MA, MIT Press, 2017).

[31] RD Atkinson and J Wu, *False Alarmism: Technological Disruption and the US Labor Market, 1850–2015* (Washington DC, Information Technology and Innovation Foundation, 2017), available at: www.bit.ly/3oNO4nR. See also E McGaughey, 'Will Robots Automate Your Job Away? Full Employment, Basic Income, and Economic Democracy' (2018) Cambridge, Centre for Business Research, University of Cambridge, Working Paper No 496.

[32] D Thompson, 'A World Without Work' *The Atlantic* (July/August 2015), available at: www.theatln.tc/2qsVCM3.

[33] J Wiecki, 'Robopocalypse Not' *Wired Magazine* (September 2017), available at: www.wired.com/2017/08/robots-will-not-take-your-job/.

[34] S Deakin, 'Luddism in the Age of Uber' *Social Europe* (3 November 2015), available at: www.socialeurope.eu/luddism-in-the-age-of-uber.

[35] D Acemoglu, 'AI's Future Doesn't Have to Be Dystopian' *Boston Review* (20 May 2021) www.bostonreview.net/forum/science-nature/daron-acemoglu-redesigning-ai.

[36] A Aloisi and V De Stefano, 'Regulation and the Future of Work: The Employment Relationship as an Innovation Facilitator' (2020) 159 *International Labour Review* 52.

[37] J Rifkin, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era*, 1st edn (New York, Tarcher, 1994).

between a select group of high-skilled workers and a growing number of permanently displaced workers, with the latter facing limited professional, economic and territorial opportunities in an increasingly globalised and digitised world. The debate in this regard has been freshly stimulated by the publication of a much cited and highly contested working paper quantifying prospective human redundancy due to susceptibility to computerisation. As Frey and Osborne put it, 47 per cent of the total employment in the United States is vulnerable to automation 'relatively soon, perhaps over the next decade or two'.[38] More than 700 occupations were studied by assessing the likelihood that a given occupation will be affected and eventually replaced by advanced machinery such as AI-driven applications, with jobs in logistics, production and administrative support being found to be particularly exposed. This exercise has been repeated with many adjustments and country- or sector-specific adaptations, and several authors have shared similarly sinister messages.[39]

From the vantage point of the present, such pessimistic predictions have not corresponded to actual developments. Perhaps unwillingly, the authors overestimated how quickly and profoundly machines would take over. In fact, they predicted that AI would be increasingly capable of executing even non-routine cognitive activities such as financial compliance checks, medical diagnostics and legal writing. Over the years, the methodology applied by Frey and Osborne has been strongly criticised: occupations considered to be at high risk often remain responsible for a substantial share of tasks that are almost impossible (or too costly and difficult) to automate. Moreover, the likelihood of substitution does not always result in the most obvious consequence. This linear extrapolation appears to overlook the principle of comparative advantage as well as the social organisation of the production process. Being concerned merely with the actual or potential speed at which technology performance improves, a purely numerical approach says very little or nothing about the qualitative aspects of a change whose contours are extremely complex to forecast.

Considering the variety of workers' tasks within even a single occupation, instead of the average task content of all jobs within each occupation, several authors have re-evaluated the original estimate and claimed that, on average across the 21 Organisation for Economic Co-operation and Development (OECD) countries, only approximately 9 per cent of jobs face the automability risk.[40] More importantly, 44 per cent of employed people will soon experience a radical change in their work-related tasks. Indeed, the effect of the widespread recourse to digital technology 'will be felt more in the content of work, rather than in its volume'.[41]

When assessing the risk of automation, recent studies have focused on a single task rather than an entire occupation, which is in line with the universally acclaimed 'task-based approach'.[42] Other studies have applied the approach adopted by Autor and his

[38] CB Frey and MA Osborne, 'The Future of Employment: How Susceptible Are Jobs to Computerisation?' (2017) 114 *Technological Forecasting and Social Change* 254.

[39] M Ford, *Rise of the Robots: Technology and the Threat of a Jobless Future* (New York, Basic Books, 2015).

[40] M Arntz, T Gregory and U Zierahn, *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis* (2016) Paris, OECD Social, Employment and Migration Working Papers No 189. See also J Manyika et al, *A Future That Works: Automation, Employment, and Productivity* (McKinsey Global Institute, 2017).

[41] Spencer et al (n 16).

[42] DH Autor, 'The "Task Approach" to Labor Markets: An Overview' (2013) Cambridge, Centre for Business Research, NBER Working Paper No 18711.

co-authors, showing that occupations are far more multifaceted than previously assumed. In fact, occupations involve the performance of a bundle of tasks,[43] not all of which may be at risk of substitutability by machines. The task-based approach dramatically reduces the (over)estimated impact of automation. An ample amount of work remains difficult to mechanise. It involves tasks that require a mixture of skills, including abstraction, imaginative capacity, critical thinking, charismatic acumen, analytical judgement, common sense, physical dexterity and craftsmanship.[44] Humans can perform many valuable activities that are beyond the reach of technology or specialise in non-automatable niches within their profession. While the direct impact of automation intended to foster the productivity-enhancing process might be job-destroying, innovations leading to the partial automation of a given task or lower prices and new products have the 'spillover' potential to trigger new economic activities and create several jobs to replace those that are lost (with a net positive effect at the aggregate level).[45]

Conversely, the catastrophist belief discussed above has been dubbed the 'lump of labour fallacy', a misguided interpretation given that there is no static lump of labour, as the amount of available work can, at least in theory, increase without quantitative limits or, rather, workers can be soaked up by different industries and specialise in new and complementary tasks.[46] This view has gained support in mainstream economics, although it is taking a long time to establish itself as a significant fact among lawmakers.

In summary, there are a number of overwhelming limits to automation. The first is connected to the difficulty of unpacking and programming activities that may seem trivial yet involve a considerable deal of tacit expertise. The substitutability of human tasks is, therefore, challenging since intellectual and manual activities are relatively hard to teach to computers and robots. Second, robots and cobots are still far from becoming mainstream in many jobs in which human labour continues to be preferred, mainly due to the comparatively low cost and significant practical challenges involved in their automation. The third limit to automation is particularly worrying, as it depends on the large availability of poorly paid jobs. A gradual yet seemingly inexorable process whereby workers are rendered interchangeable, expendable or fungible constitutes a valid alternative to full automation. This limit also brings into sharp focus a pressing issue, namely that of potential realisation. Indeed, the key question is not simply 'whether a job can be mechanised but if it is economically worthwhile given the cheap labour available'.[47] It is surely no coincidence that, in the era of disruptive technologies, we are witnessing the proliferation of bad jobs rather than seeing them disappear due to automation.[48]

[43] DH Autor, F Levy and RJ Murnane, 'The Skill Content of Recent Technological Change: An Empirical Exploration' (2003) 118 *Quarterly Journal of Economics* 1279.

[44] They draw upon 'tacit' knowledge that cannot be codified. See M Polanyi, *The Tacit Dimension* (Chicago, IL, University of Chicago Press, 2009).

[45] J Mokyr, C Vickers and NL Ziebarth, 'The History of Technological Anxiety and the Future of Economic Growth: Is This Time Different?' (2015) 29 *Journal of Economic Perspectives* 31. See also D Acemoglu and P Restrepo, 'Robots and Jobs: Evidence from US Labor Markets' (2017) Cambridge, Centre for Business Research, NBER Working Paper No 23285.

[46] DH Autor, 'Why Are There Still So Many Jobs? The History and Future of Workplace Automation' (2015) 29 *The Journal of Economic Perspectives* 3.

[47] P Fleming, 'Robots and Organization Studies: Why Robots Might Not Want to Steal Your Job' (2019) 40 *Organization Studies* 23, 28.

[48] Raisch and Krakowski (n 3).

Worse still, the large availability of cheap and under-protected labour may lead to a reduction in employment by reducing the incentive for businesses to innovate.

To date, much less emphasis has been placed on the quality and content of the jobs that will outlive digital automation.[49] Ultimately, the automation debate fails to grasp the current practices within AI-modulated workplaces, particularly for those in low-wage occupations and sectors. Today, workers face a routine-biased transformation that is wiping out the more repetitive mid-level tasks in clerical occupations and on factory floors. At the same time, labour markets worldwide are experiencing simultaneous growth at the bottom and top of the skill distribution accompanied by the substantial contraction of middle-skill jobs, which is leading to growing polarisation. Game-changing technologies 'hollow out' the distribution of jobs into either high-paying skilled positions or low-paying routine positions through the destruction of jobs in the middle. Indeed, the main threat to labour is the slow and persistent downward pressure placed on the value and availability of work.[50] As 'automation is thus part of a larger menu of options by which those who own or manage capital seek to maximise their returns … seeking more profitable ways to produce other goods and services',[51] it is essential to focus on the cases in which automation is not economically viable or technically possible. Such businesses will most likely be able to organise, monitor and discipline workers in relation to their task performance in an unprecedented and stricter manner than before, which will prove detrimental.[52]

This theme represents the central focus of the following section, which considers the most popular target of automation: decision-making tasks.

III. From Automation to Augmentation: Redefining Power Dynamics at Work

While it is largely agreed that technology is not rendering human labour redundant, its effects on the content and quality of jobs remain poorly understood. Unsurprisingly, power augmentation efforts are 'less attention grabbing than full job automation',[53] as they cause iterative and uneven shifts to management processes and jobs. In today's work contexts, people are often still working alongside machines or, more recently, with AI-enabled tools and algorithms.[54] This section examines the role played by digital automation at the level of workplace interactions, where it takes the form of complementarity

[49] De Stefano, '"Negotiating the Algorithm"' (n 21).

[50] A specific division of labour has been and remains the condition associated with the possibility of digital automation. See Eurofound, *Automation, Digitisation and Platforms: Implications for Work and Employment* (Luxembourg, Publications Office of the European Union, 2018).

[51] Estlund, 'What Should We Do After Work?' (n 22).

[52] M Ivanova, J Bronowicka, E Kocher and A Degner, 'The App as a Boss? Control and Autonomy in Application-Based Management' (2018) 2 *Arbeit, Grenze, Fluss, Work in Progress interdisziplinärer Arbeitsforschung*.

[53] B Rogers, 'The Law and Political Economy of Workplace Technological Change' (2020) 55 *Harvard CR–CLL Review* 532, 563.

[54] A Taylor, 'The Automation Charade' *Logic* (1 August 2018), available at: logicmag.io/failure/the-automation-charade/.

with or substitution for directional roles traditionally played by employers. To date, this scenario has only been considered from a limited perspective whereby human actions are 'supported with augmenting technologies that are related to perceiving, affecting, or cognitively processing the world and information around the user'.[55] By contrast, the following paragraphs examine the potential delegation of managerial powers to technological tools.[56] The hypothesis here is that machines, algorithms and platforms have the potential to reinforce (rather than replace) human workers, particularly in relation to executive tasks and strategic decisions. Paradoxically, modern technologies deployed for the hiring, scheduling, promoting and firing of workers are both potentiating the role of decision-makers and distancing them from decisions, thereby diluting liabilities and confounding responsibilities.

A growing body of evidence shows that downward pressure is leading to workforce homogenisation and deskilling, which can both be considered enabling factors in terms of the introduction of automated decision-making systems.[57] This triggers a process of simultaneous regimentation, parcellisation and uniformisation of work, which is compounded by the risk of harm, thereby partially disproving popular theories according to which automation should abolish highly demanding and psychosocially dangerous jobs.[58] While skill specialisation has often been cited as the foundation of modern economic growth,[59] workers are increasingly forced to comply with standardised rules in constrained environments, reproducing the most basic precepts of Taylorism.[60] In this perverse cycle, once work is stripped of its abstract and creative components, it rapidly becomes outsourceable either to individuals without extensive training or to dysfunctional machines fed by 'invisible workers'.[61] In the latter case, human intervention is often confined to tasks such as supervising algorithms, fixing errors, handling exceptions or even personifying machines.[62] Such task impoverishment represents a distortionary incentive for broader substitution. Platform work is yet another illustrative example of what the fragmentation of activities into simple tasks, when coupled with relentless feedback systems, ferocious self-regulation and 'organised irresponsibility' on the part of the employing entity, can entail.[63] The lessons learned through comprehensive evaluations of work organisation in this area facilitate a more comprehensive and systematic understanding of the practices of managerial augmentation.

[55] R Raisamo et al, 'Human Augmentation: Past, Present and Future' (2019) 131 *International Journal of Human-Computer Studies* 131. The 'augmentation' phrase was originally adopted in the technology design field and then imported to 'describe mediated communication processes which incorporate both the affordances of digital tech and the established feature of face-to-face interaction'.

[56] A Aneesh, 'Global Labor: Algocratic Modes of Organization' (2009) 27 *Sociological Theory* 347.

[57] JG Harris and TH Davenport, 'Automated Decision Making Comes of Age' (2005) 46 *MIT Sloan Management Review* 2.

[58] A Gilbert and A Thomas, *The Amazonian Era: How Algorithmic Systems are Eroding Good Work* (London, Institute for the Future of Work, 2021).

[59] A Smith, *The Wealth of Nations* (London, W Strahan and T Cadell, 1776).

[60] M Crowley, D Tope, LJ Chamberlain and R Hodson, 'Neo-Taylorism at Work: Occupational Change in the Post-Fordist Era' (2010) 57 *Social Problems* 421.

[61] A Casilli, *En attendant les robots-Enquête sur le travail du clic* (Paris, Média Diffusion, 2019).

[62] J Smids, S Nyholm and H Berkers, 'Robots in the Workplace: A Threat to – or Opportunity for – Meaningful Work?' (2020) 33 *Philosophy & Technology* 503.

[63] H Collins, 'A Review of The Concept of The Employer by Dr Jeremias Prassl' (*Labour Law Blog*, University of Oxford, Faculty of Law, 10 November 2015), available at: bit.ly/2Lp6PcG.

A. Disentangling the Premises and Promises of Hierarchical Powers

An overview of the distinctive features of the employment relationship could offer an important means of verifying the assumption of the current technological augmentation of managerial prerogatives.[64] Scholars have long sought to untangle the foundations of the 'rights or authority to organize and direct men, machinery, materials, and money in order to achieve the objectives of the enterprise'.[65] However, the fact is often overlooked that a private party is legitimately entitled to exercise its unilateral authority over the other contracting party in an employment relationship. This theme has regained traction due to the increasing potential of modern technologies. More recently, this peculiar yet underestimated trait of the employment contract has become topical alongside escalating litigation concerning the professional status of workers engaged in the so-called 'gig economy'.[66] Technical subordination is the effect of the exercise of fully-fledged command-and-control power. This factual condition is universally considered to be a meta-indicator, part of a comprehensive multifactorial test that may aid in proving the existence of an employment relationship. The dyadic relationship between domination and subordination has prompted renewed interest in the legal determinants of employment in the context of the concurrent thinning of canonical parameters and stiffening of new elements of supremacy.

Yet, this examination has understandably been conducted on a case-by-case basis and from the workers' perspective in an effort to solve the legal conundrum of their appropriate status classification.[67] Adams-Prassl bemoaned the fact that the concept of the employer has been neglected in both judicial and academic discussions or, occasionally, considered in a residual fashion from a purely contractual perspective.[68] Despite the emergence of multilateral arrangements and complex corporate settings placing pressure on the unitary notion of the employer and impairing the ascription of employment-related responsibilities,[69] managerial coordination has stimulated a less

[64] This section draws and expands on Aloisi and De Stefano, 'Regulation and the Future of Work' (n 36).

[65] S Young, 'The Question of Managerial Prerogatives' (1963) 16 *ILR Review* 240, 241.

[66] For a comprehensive overview, see E Kocher, *Digital Work Platforms at the Interface of Labour Law. Regulating Market Organisers* (Oxford, Hart Publishing, 2022) and chapters in part II of this volume.

[67] The Court of Justice of the European Union has repeatedly held that 'the essential feature of an employment relationship is that, for a certain period of time, a person performs services for and *under the direction* of another person, in return for which he receives remuneration' (emphasis added). Case 216/15 *Betriebsrat der Ruhrlandklinik v Ruhrlandklinik* ECLI:EU:C:2016:883 [2016]. See also N Kountouris, 'The Concept of "Worker" in European Labour Law: Fragmentation, Autonomy and Scope' (2018) 47 *Industrial Law Journal* 192; E Menegatti, 'Taking EU Labour Law Beyond the Employment Contract: The Role Played by the European Court of Justice' (2020) 11 *European Labour Law Journal* 26; S Deakin, 'The Comparative Evolution of the Employment Relationship' in G Davidov and B Langille (eds), *Boundaries and Frontiers of Labour Law* (Oxford, Hart Publishing, 2006).

[68] J Prassl, *The Concept of the Employer* (Oxford, Oxford University Press, 2015). There are notable exceptions, however. See also L Corazza and O Razzolini, 'Who is an Employer?' (2014) Centre for the Study of European Labour Law, Working Paper "Massimo D'Antona" INT–110/2014; S Deakin, 'The Complexities of the Employing Enterprise' in G Davidov and B Langille (eds), *Boundaries and Frontiers of Labour Law* (Oxford, Hart Publishing, 2006).

[69] S Vallas and JB Schor, 'What Do Platforms Do? Understanding the Gig Economy' (2020) 46 *Annual Review of Sociology* 16.

intense debate than the thorny issue of the scope of employment.[70] This section emphasises that, while strictly intertwined, the notion of employment and the concept (or, even better, the functions) of the employer should be addressed separately. Indeed, their symbiotic interconnection could hamper the sound interpretation and proper mapping of the evolution of the latter entity. Thus, it would be beneficial to insulate managerial prerogatives from the current 'misclassification' quandary. The heavy theoretical baggage might overshadow current variations in such powers and, while courts are often guided by remedial logic in the case of law avoidance, this focus fails to successfully grasp the intensification and diffusion of employer prerogatives. This recalibration may help to establish a more encompassing understanding of the power relationships at work.

It is interesting to consider this dynamic tension from the employing entity's perspective. Drawing on multidisciplinary insights, it must be acknowledged that the legal authority to direct an enterprise has always been considered functional in relation to attaining genuine organisational objectives. Edwards explained how workplaces are ruled from the top down because hierarchies are far more profitable than one-off, decentralised arrangements.[71] Managerial prerogatives can be conventionally unboxed into three complementary powers: direction, evaluation and discipline. Direction is defined as setting 'what needs to be done' in what order and time frame, evaluation consists of supervising and assessing workers' performance, while discipline illustrates the apparatus for administering sanctions and rewards, eliciting collaboration and enforcing compliance.[72] Whatever the means used to wield them, such powers are strictly intertwined and should be seen as a functional continuum. Due to being 'overlapping and complementary',[73] they operate jointly and in pursuit of the efficient coordination of economic factors and productive activities.[74] Practically speaking, employee monitoring is conducted to verify whether workers are abiding by instructions and to ensure the virtuous correspondence between specific tasks and larger projects.[75] In a similar vein, disciplinary power is exercised to discourage defiance and punish misdemeanours while influencing behaviours 'by example'.[76]

As an employment contract is by default expected to be lasting, reaching endless agreements on all aspects of it would prove a titanic task, not to mention the need to amend the agreed upon terms to adjust production to meet constantly changing internal needs and external fluctuations. The various theories of relational contracts have clarified that superior–subordinate arrangements are necessarily incomplete, as it would be impossible to specify all contingencies in advance.[77] Such incompleteness may not

[70] S Deakin, 'The Changing Concept of the "Employer" in Labour Law' (2001) 30 *Industrial Law Journal* 72. See also H Collins, 'Ascription of Legal Responsibility to Groups in Complex Patterns of Economic Integration' (1990) 53 *Modern Law Review* 731.

[71] R Edwards, *Contested Terrain: The Transformation of the Workplace in the Twentieth Century* (New York, Basic Books, 1982).

[72] ibid.

[73] Deakin, 'The Changing Concept of the "Employer" in Labour Law' (n 70).

[74] L Tebano, *Lavoro, potere direttivo e trasformazioni organizzative* (Naples, Editoriale Scientifica, 2020). See also M Persiani, *Contratto di lavoro e organizzazione* (Milan, Giuffrè, 1966).

[75] A Topo and Razzolini, 'The Boundaries of the Employer's Power to Control Employees in the ICTs Age' (2018) 39 *Comparative Labor Law & Policy Journal* 389.

[76] K Ball, 'Workplace Surveillance: An Overview' (2010) 51 *Labor History* 87.

[77] CJ Goetz and RE Scott, 'Principles of Relational Contracts' (1981) 67 *Virginia Law Review* 1089. See also U Muehlberger, 'Hierarchies, Relational Contracts and New Forms of Outsourcing' (Torino, ICER Working

be cost-effective. Coase observed that, within a firm, 'market transactions are eliminated' and replaced with 'the entrepreneur-coordinator, who directs the production'.[78] As argued elsewhere,[79] transaction costs, namely the costs incurred when it comes to obtaining information, bargaining regarding contractual terms, securing consent and enforcing agreements, are reduced within the firm because formal, hegemonic powers replace time-consuming negotiation and price-mechanism governance. Authority is unmistakably vested in the person of the employer, who commonly (and implicitly) transfers their prerogatives to a group of managers and supervisors who are subject to the upstream power despite their ample room to manoeuvre. This private governance structure, which is seen as 'a miniature legal system' with neat separation between task definers and task executors,[80] has traditionally been used to elucidate the vital socio-economic functions of the employment relationship.

The contract of employment reserves for the employer 'a space for discretion in decision-making, beyond any express agreement for the performance of the contract'.[81] The source of this authority is the legal framework, which acknowledges a pre-existing situation of power. Indeed, legislation aims to streamline production by legitimising the prerogative to change the terms without the consent of the contractual debtor (ie, the worker).[82] The French Labour Code states that 'working time is the time during which the employee is at the employer's disposal and complies with her directives'.[83] In Italy, Article 2086 of the Civil Code provides that 'the entrepreneur is the head of the business and her collaborators hierarchically depend on her'.[84] Simultaneously, according to Article 2104, 'the employee must also observe the instructions for the work execution given by the entrepreneur and by her collaborators (managers and supervisors)'. According to the gravity of the infringement, failure to fulfil the duty of loyalty and obedience may give rise to the application of disciplinary sanctions. In Spain, the personal ambit of the application of the Workers' Statute is defined as follows: 'workers who voluntarily provide their paid services on behalf of others and within the scope of organisation and management of another natural or legal person, called employer

Paper No 22, 2005); OE Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (New York, Free Press, 1985).

[78] RH Coase, 'The Nature of the Firm' (1937) 16 *Economica* 386, 388.

[79] A Aloisi, 'Hierarchies Without Firms? Vertical Disintegration, Outsourcing and the Nature of the Platform' (2020) 8 *Quaderni del Premio Giorgio Rota* 11.

[80] H Collins, 'Market Power, Bureaucratic Power, and the Contract of Employment' (1986) 15 *Industrial Law Journal* 1.

[81] S Deakin, *The Many Futures of the Contract of Employment* (Cambridge, ESRC Centre for Business Research, University of Cambridge, 2000).

[82] D Landes, *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge, Cambridge University Press, 1969). Landes argues that the colocation of workers in factories started occurring before the advent of mechanical infrastructure in an effort to exercise organisational power in a more efficient way than in the case of fragmented and less controllable home-based work.

[83] Article L3121-1, modifié par Loi n° 2016-1088 du 8 août 2016 – art 8 (V). In the absence of a statutory definition of employment, the French Supreme Court stated that 'the relationship of subordination is characterised by the performance of work under the authority of an employer who has the power to give orders and directives, to control their execution and to sanction the breaches of her subordinate'. Cour de Cassation, Chambre sociale, du 13 novembre 1996, 94-13.187. See also G Auzero, D Baugard and E Dockès, *Droit du travail* (Paris, Dalloz, 2021).

[84] A Perulli, 'Il potere direttivo dell'imprenditore. Funzioni e limiti' (2002) 16 *Lavoro e diritto* 397. See also S Sciarra, 'Diritti e poteri nei luoghi di lavoro. Una lettura dello Statuto dei lavoratori nel tempo della pandemia' (2021) 293 *Moneta e Credito* 11.

or entrepreneur'.[85] Relatedly, Article 5(c) states that '[workers must] comply with the orders and instructions issued by the employer in the regular exercise of his managerial powers'.[86]

Employers and their delegates can observe, redeploy and evaluate work on a minute-by-minute basis and in terms of its microscopic components down to the last observable movement. In short, employers rule the workforce and the workplace. Despite differing domestic specificities, a relatively standard model can be found across jurisdictions in both civil and common law systems.[87] Due to a single scheme that encapsulates a set of developmental rules and conditions, the employee consents to the employer's authority and agrees to follow the orders promulgated by managers in a 'zone of acceptance'.[88] Within this area of constructive ambiguity, workers can be transferred to different locations, assigned to new and distinct tasks, assessed, reprimanded and even dismissed as long as procedural and substantive rules are followed. Unilateral managerial variations should be exercised reasonably and rationally, pursuing the interests of the enterprise without biases or irrelevant considerations. By providing firms with broad, albeit not completely unfettered or arbitrary, discretionary power, this arrangement nurtures functional flexibility, which spurs on adaptability and versatility,[89] thereby guaranteeing responsiveness to the ever-changing nature of socio-economic contexts.

Several studies, not necessarily in the employment law field, have focused on the power dynamics engendered by this legal template.[90] For instance, Anderson compared the employment relationship to the vertical rapport between public institutions and citizens. From a philosophical perspective, according to this model, those 'governed are kept out of decision-making',[91] not infrequently in a despotic way, resulting in a 'democratic deficit'.[92] The pervasiveness of this open-ended authority is echoed in Collins' studies, which describe the authoritarian structure 'that appears to be at odds with the commitment in liberal societies to values such as liberty, equal respect, respect for privacy'.[93] While it is true that the most irritating aspects of domination, including the right to change the normative situation of the employee and the requirement that

[85] Real Decreto Legislativo 2/2015, de 23 de octubre, por el que se aprueba el texto refundido de la Ley del Estatuto de los Trabajadores.

[86] Article 20 ('1. The worker must carry out the agreed work under the direction of the employer or her delegates. 2. Fulfilling the obligation to work assumed in the contract, the worker owes the employer the diligence and collaboration in the work established by the legal provisions, the collective agreements and the orders or instructions adopted in the regular exercise of [the employer's] powers and, failing that, by the uses and customs … 3. The employer may adopt the most appropriate measures of surveillance and control to verify compliance by the worker of her obligations and duties').

[87] G Racabi, 'Abolish the Employer Prerogative, Unleash Work Law' (2022) 43 *Berkeley Journal of Employment and Labor Law* 79. See also R Nielsen, *Employers' Prerogatives: In a European and Nordic Perspective* (Copenhagen, Handelshøjskolens Forlag, 1996).

[88] HA Simon, 'Organizations and Markets' (1991) 5 *Journal of Economic Perspectives* 25.

[89] M Rönnmar, 'The Managerial Prerogative and the Employee's Obligation to Work: Comparative Perspectives on Functional Flexibility' (2006) 35 *Industrial Law Journal* 56.

[90] Collins, 'Market Power, Bureaucratic Power, and the Contract of Employment' (n 80).

[91] E Anderson, *Private Government* (Princeton, NJ, Princeton University Press, 2017) 45.

[92] G Davidov, 'The Three Axes of Employment Relationships: A Characterization of Workers in Need of Protection' (2017) 52 *University of Toronto Law Journal* 357. See also A Gorz, 'The Tyranny of the Factory: Today and Tomorrow (1973) 16 *Telos* 61.

[93] H Collins, 'Is the Contract of Employment Illiberal?' in H Collins, G Lester and V Mantouvalou (eds), *Philosophical Foundations of Labour Law* (Oxford, Oxford University Press, 2018) 48.

workers obey all instructions to the letter, have been mitigated in modern societies, ongoing tectonic shifts call into question the capability, role and significance of employment-related constraints on managerial prerogatives and the conditioned authority of non-human bosses.

Given the unbalanced bargaining power and information asymmetries, employment protection legislation limits the employer's legal powers of command. The task of labour regulation is actually twofold, as it both allows for and constrains autonomous norm creation.[94] In short, the law and worker representatives are expected to regulate, support and restrain the power of management. Upon closer inspection, this model aims to prevent abuses of managerial power by rationalising the managerial prerogative to safeguard human dignity and autonomy.[95] To offer a cursory overview, in most European Union (EU) jurisdictions, case law has identified professionalism as an intrinsic limit to the power to change duties, several provisions prevent the infringement of workers' privacy when it comes to monitoring, and mandatory rules against unfair dismissal apply.[96] A vast array of rules are mobilised to temper and tone down the level of capricious decision-making.[97] While labour law is designed to eradicate the imperfections typical of human bosses, technologies profoundly displace and disrupt this set of counterweights. For instance, algorithmic management represents a stark illustration of the difficulties associated with limiting employers' exuberance.[98] Moreover, there has been non-negligible movement from centralised decision-making towards scattered, outsourced centres of power, often involving co-workers and even customers.[99] In a nutshell, power is now shedding its skin.

B. Addressing the *Boss Ex Machina*, the Marvel and the Menace of Power Expansion

Most cases concerning the existence of 'direction' have dealt with this defining element from the perspective of the 'on/off' toggle of employee status, thereby addressing the dilemma using a binary approach. Platform workers have been found to be employed by the relevant company when the claimants have succeeded in demonstrating the exercise

[94] D Dukes, 'Constitutionalizing Employment Relations: Sinzheimer, Kahn-Freund, and the Role of Labour Law' (2008) 35 *Journal of Law and Society* 341.

[95] S Deakin and F Wilkinson, *The Law of the Labour Market: Industrialization, Employment, and Legal Evolution* (Oxford, Oxford University Press, 2005). See also H Collins, 'Market Power, Bureaucratic Power, and the Contract of Employment' (1986) 15 *Industrial Law Journal* 1.

[96] C158 – Termination of Employment Convention, 1982 (No 158); Article 24 European Social Charter (Revised); Article 30 Charter of Fundamental Rights of the European Union (2000/C 364/01). See also P Collins, 'Automated Dismissal Decisions, Data Protection and The Law of Unfair Dismissal' (*UK Labour Law Blog*, 19 October 2021), available at: www.bit.ly/3oaNfnu.

[97] D Cabrelli and R Zahn, 'Theories of Domination and Labour Law: An Alternative Conception for Intervention?' (2017) 33 *International Journal of Comparative Labour Law and Industrial Relations* 339.

[98] A Rosenblat and L Stark, 'Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers' (2016) 10 *International Journal of Communication* 3758.

[99] K Levy and S Barocas, 'Refractive Surveillance: Monitoring Customers to Manage Workers' (2018) 12 *International Journal of Communication* 23.

of organisational prerogatives by management, either directly or indirectly, including through technological devices. In the well-known Uber case, Advocate General Szpunar argued that

> indirect control [not exercised in the context of a traditional employer–employee relationship] based on financial incentives and decentralised passenger-led ratings, with a scale effect, makes it possible to manage in a way that is just as, if not more, effective than management based on formal orders given by an employer to his employees and direct control over the carrying out of such orders.[100]

Very little is currently known about the extent, form and scope of this power or about the 'potential flaws and drawbacks associated with machine decision-making, and systematic and effective institutional mechanisms to guard against them'.[101] The present section aims to fill this gap in the literature. From a practical perspective, the findings could offer meaningful resources for judges and litigators. More importantly, developing a faithful representation of managerial authority throughout the entire lifecycle of working relationships represents a valuable starting point in the process of enforcing and reinforcing limits in both innovative and conventional sectors of the labour market.

Today, workers in manufacturing and office-based occupations can receive orders from an automated system, be constantly monitored by Global Positioning System (GPS) trackers or digital log-stamps, and be dismissed for not achieving the goals set by computational tools measuring average targets and clients' level of satisfaction, with little if any possibility of objection and rectification. Many workers operate within a system based on incentives and penalties, which are defined on the basis of granular data collected from myriad sources through digital tools or feedback from final clients and colleagues.[102] Constant evaluation renders this problem even more acute. Additionally, the pandemic has prompted the adoption of employee-monitoring software in relation to both front line and remote workers in an effort to fine-tune work processes, implement distancing requirements and uphold productivity. Moreover, this invasion has strengthened the myth that decisions made by means of mathematical processing could reduce the weight of human subjectivity, thereby resulting in fairer and more accountable outcomes. Precisely because employer prerogatives are mutually reinforcing, this section contends that the expansion of surveillance impacts the nature and scope of the organisation and its disciplinary prerogatives. This leads to a 'genetic variation' in terms of the administration of workplace interactions, representing 'as much a technical challenge as it is a legal one'.[103]

[100] Opinion of Advocate General Szpunar delivered on 11 May 2017, Case C-434/15 *Asociación Profesional Élite Taxi v Uber Systems Spain* ECLI:EU:C:2017:364 [2017], para 52.

[101] K Yeung, 'Why Worry about Decision-Making by Machine?' in K Yeung and M Lodge (eds), *Algorithmic Regulation* (Oxford, Oxford University Press, 2019) 21, 23.

[102] MT Bodie, MA Cherry, ML McCormick and J Tang, 'The Law and Policy of People Analytics' (2016) 88 *University of Colorado Law Review* 961. See also C Safak and J Farrar, 'Managed by Bots: Data-Driven Exploitation in the Gig Economy' (London, Worker Info Exchanges, 2021), available at: www.workerinfoexchange.org/wie-report-managed-by-bots.

[103] J Adams-Prassl, 'When Your Boss Comes Home: Three Fault Lines for the Future of Work in the Age of Automation, AI, and COVID-19' (2020) *Ethics of AI in Context* 1. See also Jeremias Adams-Prassl, ch 12 in this volume.

This variation can be considered from various perspectives. First, while the literature in the field of omnipresent AI-enabled employee monitoring has recently blossomed,[104] it would be misleading to consider these practices as representing a mere threat to privacy rights. Indeed, something more structural is taking place. What is generally omitted from the story is that surveillance, which is now deeply ingrained in all workplaces,[105] is only one of many complex jigsaw pieces and, further, is not exercised per se.[106] Conversely, it is instrumental in allocating decision-making prerogatives to separate agents, either human or mechanic – an activity that also entails the dispossession of workers' autonomy. At the same time, monitoring informs the imposition of sanctions. In addition, the boss–worker pyramid traditionally embedded within a centralised organisation is now spreading across the labour market, without the corresponding entitlements compensating for the lack of agency enshrined in the employment relationship. Such aggrandisement of power distorts the already weakened boundaries between categories. The hallmarks of the employment relationship, ie, the possibility of dictating terms, appraising compliance and sanctioning noncompliance, are now shared features in several professional contexts. This results in legal uncertainty triggered by the diffusion of managerial prerogatives across the full spectrum of contractual arrangements.

Thus, it is through the prism of workplace governance that the introduction of new technologies ought to be viewed. While platforms operating in the last-mile logistics sector or exchanging back-office tasks have been accused of abandoning employer obligations and avoiding the associated costs (thanks to a panoply of strategies, the most common of which is the adoption of debatable self-employment formats), their legacy lies in the intensification of the power to instruct workers, assess their performance and downgrade their profile due wholly or partly to automated decision-making systems. Interestingly, Estlund has reasoned that autocratic control has now been abandoned in favour of alternative arrangements, in a way challenging traditional assumptions that employees are preferred over external suppliers due to the wide managerial latitude afforded by this legal template.[107] While it is true that 'employers are increasingly choosing to forego their dictatorial power over workers in favour of more indirect but cost-effective means',[108] managerial prerogatives are now spilling over beyond the realm of the contract of employment, with businesses also exercising intense direction, monitoring and disciplinary powers in relation to self-employed workers and external providers.

Managerial prerogatives are being radically magnified in their extent and extended in their scope beyond the often blurred (legal, temporal and spatial) confines of employment.[109] While the apparent goal of this aggrandisement of power is not necessarily to

[104] Ball (n 76); I Ajunwa, K Crawford and J Schultz, 'Limitless Worker Surveillance' (2017) 105 *California Law Review* 735. See also O Solon, 'Big Brother Isn't Just Watching: Workplace Surveillance Can Track Your Every Move' *Guardian* (6 November 2017), available at: bit.ly/3iVFos6.

[105] A Nguyen, *The Constant Boss: Work Under Digital Surveillance* (New York, Data & Society Research Institute, 2021), available at: www.apo.org.au/node/312352.

[106] M Martinez and MP Iacono, 'Dealing with Critical IS Research: Artifacts, Drifts, Electronic Panopticon and Illusions of Empowerment' in R Baskerville, M De Marco and P Spagnoletti (eds), *Designing Organizational Systems* (New York, Springer, 2013) 83.

[107] C Estlund, 'Rethinking Autocracy at Work' (2017) 131 *Harvard Law Review* 795.

[108] ibid.

[109] V De Stefano. '"Masters and Servers": Collective Labour Rights and Private Government in the Contemporary World of Work' (2020) 36 *International Journal of Comparative Labour Law and Industrial Relations* 425.

dodge legal obligations,[110] the hybridisation makes it possible for companies to resort to effective means of exercising control 'in a guise that courts, armed with conventional metrics for employment vs independent contracting, may not recognize'.[111] When centrifugal forces are matched by an intensification of power and an extensification of its impact,[112] the condition of workers' perennial subordination may suffer the looming consequences of this profound shift. Nowadays, people analytics and algorithmic governance, methods aimed at running a business in a hyper-efficient and data-driven way, are salient instantiations of new evidence-based HRM practices, which I boil down into the *boss ex machina* formula.[113] Various groups of workers are on the verge of experiencing not replacement by machines but treatment as robots. Sectoral investigations and anecdotal reports abound, although we lack a comprehensive and systematic account that could help to explain whether the transformation of managerial prerogatives is quantitative (determined by the increase in agents embodying authority) or qualitative (affecting the very nature of power).[114]

In the past, different forms of digital surveillance were used to make classifications and identify workflow bottlenecks or deviant conduct. Essentially, the use of data was eminently *descriptive*, being nothing more than a sometimes chaotic, concise and imprecise digital representation of numbers and statistics used to portray reality. Now, a deeper reliance on inferential analytics, which is favoured by machine learning, helps managers to detect patterns and generate predictions concerning team dynamics, future behaviours and career prospects thanks to probabilistic evaluations of data sets.[115] This role can be defined as *predictive*, as forecasts are performed in accordance with a set of programmed objectives that rely on advanced statistical modelling to identify patterns or correlations within data in order to make informed HRM decisions regarding quotidian issues.[116] At the same time, the predominant system of tacit penalty and reward is used to enforce compliance, thereby subtly reconfiguring interactions with near-perfect information, which represents the most advanced yet still under-researched facet of algorithmic governance. Potent data-driven policies aim to subtly change human conduct. Workers' choice is severely constrained by *prescriptive* or *pre-emptive* algorithmic tools that 'shap[e] an environment in which there are no alternatives to performing

[110] Adams-Prassl, 'When Your Boss Comes Home' (n 103).

[111] Estlund, 'Rethinking Autocracy at Work' (n 107) 821.

[112] D Weil, *The Fissured Workplace: Why Work Became So Bad for So Many and What Can Be Done to Improve It* (Cambridge, MA, Harvard University Press, 2014).

[113] A calque from the Latin expression 'god from the machine'. According to the *Encyclopaedia Britannica*, 'a person or thing that appears or is introduced into a situation suddenly and unexpectedly and provides an artificial or contrived solution to an apparently insoluble difficulty. The term was first used in ancient Greek and Roman drama, where it meant the timely appearance of a god to unravel and resolve the plot. The *deus ex machina* was named for the convention of the god's appearance in the sky, an effect achieved by means of a crane (Greek: *mēchanē*)'. A Aloisi and V De Stefano, *Your Boss is an Algorithm: Artificial Intelligence, Platform Work and Labour* (Oxford, Hart Publishing, 2022).

[114] I Manokha, 'New Means of Workplace Surveillance' *Monthly Review* (1 February 2019), available at: www.bit.ly/3uaShCj.

[115] KC Kellogg, MA Valentine and A Christin, 'Algorithms at Work: The New Contested Terrain of Control' (2020) 14 *Academy of Management Annals* 366.

[116] Gilbert and Thomas (n 58). See also J Meijerink, M Boons, A Keegan and J Marler, 'Algorithmic Human Resource Management: Synthesizing Developments and Cross-Disciplinary Insights on Digital HRM' (2021) *International Journal of Human Resource Management* 1.

the work as prescribed'.[117] In some cases, this model leaves employees with the impression that they own their actions in reality.[118] By applying the same logic with relentless consistency, even bosses that operate through technologies stop being self-reflecting agents.

Both during and after the hiring process, an almost unthinkable number of data points, including contact lists on social media, emails sent, websites visited, cookies and documents in shared repositories, may serve as indicators for personnel management decisions, leading to new forms of anticipatory conformity.[119] Both oppressive and tenuous command-and-control positions are transitioning to the next level in a situation in which digitised systems impose not only rhythms and locations, but remuneration, rewards and penalties.[120] This transformation of managerial prerogatives displaces existing social institutions because most limitations on managerial domination were designed for a pre-digital context, where power was exercised directly or using tools whose reach was far less developed than today. The inadequacy of the systems designed to temper bosses' authority risks frustrating 'the range of normative values and goals pursued by employment law'.[121] This results in the exacerbation of vulnerability, in addition to the complexity of ascribing responsibility when power sources are fragmented and distributed across multiple actors. While technologically encoded to increase standardisation and reduce the risk of human error,[122] it can perpetuate and deepen prior discrimination patterns and generate related harms, such as short-term thinking, loss of human expertise and lock-in effects.[123]

Although human flexibility has been criticised as a source of arbitrariness, it is also expected to promote the 'virtues of human discretion, judgment and agency, which have long been recognised in socio-legal scholarship as vital in overcoming the inevitable imperfection associated with legal rules'.[124] Material workplaces and human bosses are far from perfect; however, the delegation of executive prerogatives to ADMS ends up displacing the wide variety of procedural and substantive norms stemming from legislative intervention and collective negotiation. Although modern legal systems have a wealth of practices for confronting flaws in human decision-making,[125] the rise of 'algorithmic bosses' fundamentally unsettles existing mechanisms. The ongoing and wide-ranging transformations make gaps in protection systems and loopholes in regulations even more palpable.

Under the veneer of innovation, code-based governance systems are too rigid to depart from predetermined solutions as well as being less adaptable than human authority. Their

[117] Aneesh (n 56).
[118] MK Lee, D Kusbit, E Metsky and L Dabbish, 'Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers' Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (2015) 1603; Fleming (n 47).
[119] Ball (n 76).
[120] A Delfanti, 'Machinic Dispossession and Augmented Despotism: Digital Work in an Amazon Warehouse' (2019) 1 *New Media & Society* 23.
[121] P Collins and J Atkinson, 'Labour Rights, Labour Values and Technology at Work' (Paper presented at the LLRN5 Conference, June 2021).
[122] S Wiblen and JH Marler, 'Digitalised Talent Management and Automated Talent Decisions: The Implications for HR Professionals' (2021) *International Journal of Human Resource Management* 1.
[123] Raisch and Krakowski (n 3).
[124] Yeung, 'Why Worry about Decision-Making by Machine?' (n 101) 29.
[125] ibid.

'accuracy', 'precision' and 'impartiality' guarantee the infinite replication of hidden flaws, biases and disparities without the possibility of halting feedback loops.[126] Hence, not only is assuming the objective or neutral nature of data-driven governance largely disingenuous, it also downplays the importance of existing legal remedies by shifting decisions to a level of presumed non-explicability that impedes objections and contestations. What are the legal strategies for countering autonomous decision-making processes in the workplace and rendering them reasonable, legible and assessable? How can prior authorisation requirements be met when workers freely consent to gamification tools collecting data and then surreptitiously assessing them? What is the role of dismissal regulation when self-employed or non-standard workers can be simply 'discontinued' following negative feedback from disappointed customers? These questions are all worth addressing while technology continues to be adopted and improved.

The routinisation of all management functions evoking an air of infallibility also represents a challenge for firms, especially large-scale companies wherein the chains of command are complex, as it can thwart productivity. Indulging data-centric obsessions pushes workers to satisfy formal requirements that are tracked and assessed through metrics, leaving quality objectives unmet.[127] Continuous performance reviews, unpredictable alterations in terms of task and slot allocation, and real-time nudges foster an environment in which the importance of praising the *boss ex machina* by far exceeds the relevance of delivering meaningful results. At the same time, while making instructions more persuasive, the constant threat of disciplinary action discourages unorthodox initiatives and unanticipated actions, which impairs creativity and promotes subservient behaviours in monolithic workplaces. Such attitudes may lead to burn-out and increased turnover, thereby wasting accrued know-how and the skills developed or improved over time. Disjointed information often leads to illogical HRM solutions. Moreover, from a legal perspective the unpredictability and limited explicability of executive choices made by 'black boxes' cannot insulate employers from responsibilities.[128] Paradoxically, the intricacy of reverse-engineering or documenting decision-making processes amplifies the vulnerability of bosses' legal position, as systems based on presumptions may be in force in courts.

Bosses' authority is not only targeting new subjects, it is also becoming less palpable and more effective, departing from traditional at-a-glance management, including when professional activities are decoupled from the physical workplace premises.[129] This more sophisticated form of power benefits from delayered and flattened bureaucratic hierarchies, with workers being encouraged to indicate their availability, track themselves, rate colleagues and utilise variable scheduling models in gamified environments.[130] Workers

[126] RE Kidwell and R Sprague, 'Electronic Surveillance in the Global Workplace: Laws, Ethics, Research and Practice' (2009) 24 *New Technology, Work and Employment* 194.

[127] T Prasanna, P Cappelli and V Yakubovich, 'Artificial intelligence in human resources management: Challenges and a path forward' (2019) 61 *California Management Review* 15.

[128] F Pasquale, *The Black Box Society: The Secret Algorithms that Control Money and Information* (Cambridge, MA, Harvard University Press, 2015).

[129] G Sewell and L Taskin, 'Out of Sight, Out of Mind in a New World of Work? Autonomy, Control, and Spatiotemporal Scaling in Telework' (2015) 36 *Organization Studies* 1507.

[130] AJ Wood, *Despotism on Demand: How Power Operates in the Flexible Workplace* (Ithaca, NY, Cornell University Press, 2020).

personally contribute to the generation of insights into workplace dynamics, from booking spaces in the case of hot-desk models to identifying less productive moments during the working day. In recent decades, something similar has occurred in the service sector due to the involvement of final clients, customers and shoppers in activities once viewed as part of the core business.[131] Managerial prerogatives have 'mostly moved away from an authoritarian regime, wherein workers were subjected to discreet and predictable surveillance at the hands of employers'.[132] Notably, these practices have now been redesigned to leverage an 'ostensibly participatory character, wherein workers are expected to aid employer[s]' and supervisors in their own administration.[133] The use of these less coercive means of control risks placing workers on an electronic leash,[134] while bosses could then assume decisions to be informed by the wealth of gathered information.

Warehouses, fulfilment centres, logistic hubs, fast food and dark kitchen chains, and cleaning and maintenance services – places where working conditions are physically demanding, and bad-paying jobs coexist with oppressive managerial regimes – have all served as large sites of experimentation. In these industries, despotism predated the arrival of game-changing technologies, although it is now coupled with manipulation strategies that claim workers enjoy greater autonomy. What is perceived as freedom is simply a form of deception based on nudging techniques constantly refining individuals' choice ecosystems. As shown by Yeung, decisional choice contexts are 'intentionally designed in ways that systematically influence human decision-making in particular directions'.[135] In fact, behaviour change is considered most effective when it leaves the person being managed feeling that they own their choices.[136] A highly detailed standard-setting model leads to outcomes considered desirable by those who have the authority to set targets.[137] In this case, technology allows for the realisation of continuous and dynamic adjustments, constantly reconfiguring an individual option architecture, which alters behaviours in a very opaque manner by tailoring inescapable cages. Due to unwritten rules and design features, a gentler version of power facilitates 'nimble, unobtrusive and highly potent' persuasion camouflaged as autonomy, thereby realising the subtlest version of coercion.[138]

The diagnosis of the augmentation of upstream authority reveals the parallel erosion of self-government. As hierarchical pressure mounts, workers end up experiencing a loss of agency and a sense of alienation from their work,[139] which impairs their abstract

[131] U Huws, *Labor in the Global Digital Economy: The Cybertariat Comes of Age* (Hatfield, JSTOR, 2014).
[132] Ajunwa, Crawford and Schultz (n 104).
[133] ibid.
[134] Aneesh (n 56). See also D Lyon, 'The Search for Surveillance Theories' in D Lyon (ed), *Theorizing Surveillance: The Panopticon and Beyond* (Portland, OR, Willan Publishing, 2006) 3.
[135] K Yeung, '"Hypernudge": Big Data as a Mode of Regulation by Design' (2017) 20 *Information, Communication & Society* 118.
[136] Gilbert and Thomas (n 58).
[137] M Stelmaszak Rosa and A Aaltonen, 'As firms collect their data, employees learn to game the system' (*LSE Blog*, 16 January 2020), available at: www.bit.ly/3CSvr6l.
[138] Gilbert and Thomas (n 58). See also B Callaci, *Puppet Entrepreneurship: Technology and Control in Franchised Industries* (New York, Data & Society Research Institute, 2021).
[139] Despite the nuances in terms of their meaning, in this section 'autonomy' and 'agency' are used interchangeably and are intended to refer to the possibility of setting goals and choosing the methods through which they can be achieved.

thinking and inventive contribution while promoting diligent homogeneity. The consequence of this is that they 'can be deprived of the right to conceive [of] themselves as the directors of their own actions'.[140] As a result, workers adopt subservient behaviour that they assume will be viewed positively by bosses. The ultimate consequence of this could be a gradual stifling of business competitiveness. More often than not, technologies unduly compromise the space available for autonomy.[141] To address and forestall this problem, labour regulation and modern management theories should uphold more benign uses of new tools and practices in an effort to open up emancipating opportunities for workers.[142]

IV. Concluding Remarks: Building Emancipating Work Environments

This final section appraises the role of individual and collective self-determination in promoting prosperous working environments in which innovation is harnessed sustainably.[143] It will be argued that 'freedom as non-domination' not only entails that individuals are 'not subject to the arbitrary or uncontrolled will of another', but that they are vested with meaningful discretion to shape their own actions.[144]

While the current research on work quality is scattered across several disciplines, including the organisational psychology, economics and sociology fields,[145] this concept is almost unanimously defined as a multidimensional construct. One of several determinants contributing to its definition is the degree of decisional latitude, ie, personal agency in terms of defining the actions by which the indicated goals must be achieved. A higher level of agency at the task level is associated with a higher level of work quality.[146] According to Szekér and colleagues,[147] this is reflected in the organisation of the work to be performed when it comes to the order, method and tempo of the tasks. In the near-endless litigation concerning legal status, the amount of flexibility that a worker enjoys in relation to executing a task for a company has been pivotal in denying the existence of a relationship of subordination.[148] This narrow understanding of flexibility,

[140] Lee, Kusbit, Metsky and Dabbish (n 118).

[141] In this chapter, I use 'agency' and 'autonomy' interchangeably.

[142] A Licht, 'Entrepreneurial Spirit and What the Law Can Do About It' (2006) 28 *Comparative Labor Law & Policy Journal* 817.

[143] T Kato and M Morishima 'The Productivity Effects of Participatory Employment Practices: Evidence from New Japanese Panel Data' (2002) 41 *Industrial Relations: A Journal of Economy and Society* 487.

[144] Collins and Atkinson (n 121).

[145] GS Lowe, *The Quality of Work: A People-Centred Agenda* (Oxford, Oxford University Press, 2000).

[146] M Bisello, E Peruffo, E Fernandez-Macias and R Rinaldi, *How Computerisation is Transforming Jobs: Evidence From the Eurofound's European Working Conditions Survey* (European Commission, Joint Research Centre, No 2019/02, 2019).

[147] L Szekér, I Smits and G Van Gyes, 'It Takes More Than One Measure. Capturing the Multidimensionality of Job Quality with Job Types and Multiple Job Quality Outcomes' (2017) InGRID Working Paper.

[148] The concept of nominal autonomy in terms of work organisation has been used to defeat the subordination test in court, especially in recent litigation concerning the legal status of platform workers. Case C-692/19 *B v Yodel Delivery Network Ltd* ECLI:EU:C:2020:288 [2020].

which is currently weaponised in the most advanced labour market areas,[149] should not be confused with agency.

Ultimately, agency encompasses direct control over the design, implementation and maintenance of all aspects of organisation, performance and execution. Indeed, as demonstrated by the job demands – job control model, the amount of discretion moderates the effects of the job demands on psychological pressure.[150] As a result, the psychosocial wellbeing of employees can be enhanced by offering a higher level of self-determination.[151] Together with investment in human capital, direct or mediated (via worker representatives) participation in job crafting through the selection and allocation of tasks provides a unique opportunity to foster workers' moral power, self-worth and meaningfulness. Contrary to the widespread misconception that humans are not trustworthy or responsible (a myth partially disproved by the fact that productivity has not declined following the adoption of remote working schemes during the Covid-19 pandemic),[152] individual and collective self-government represents one of the best ways to achieve long-lasting organisational success.

For instance, theories of self-determination in the workplace have been employed to explain how workers' participation in the definition of performance measurement systems can 'improve [the] validity of the operational performance metrics and increase their sensitivity, precisions and verifiability'.[153] When coupled with transparent and constant feedback delivered in a supportive environment, job autonomy is a crucial determinant of both self-motivation and worker morale.[154] In turn, intrinsic motivation is key to engagement and efficiency, and it facilitates the learning of new skills. Admittedly, this does not mean that organisations should be run in an entirely bottom-up fashion. Proponents of self-determination theory acknowledge that there can be autonomy even in relation to tasks that are mandated or in circumstances that are controlled if the motivation behind the actions demanded is made clear and recognised. In contrast to freedom and independence, agency should be understood as the volition to pursue a goal, even in a context in which the specific means of attaining it are obligatory or dictated by bosses. It has also been considered an attractiveness factor for companies striving to entice and retain talent. Workers are not inspired by rigid organisational templates in highly vertical structures, which prevents them from pursuing project-based arrangements and time and space sovereignty. In this

[149] Platform giants have long sought to claim that, by classifying platform workers as employees, they would lose a great deal of flexibility, which is defined as 'the ability to choose if and when to work'. A Adams-Prassl, J Adams-Prassl and D Coyle, 'Uber and Beyond: Policy Implications for the UK' (2021) The Productivity Institute, Productivity Insights Paper No 001.

[150] RA Karasek Jr, 'Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign' (1979) 24 *Administrative Science Quarterly* 285; A Wrzesniewski and JE Dutton, 'Crafting a Job: Revisioning Employees as Active Crafters of their Work' (2001) 26 *Academy of Management Review* 179.

[151] CEPS, EFTHEIA and HIVA-KU Leuven, *Study to Gather Evidence on the Working Conditions of Platform Workers* (Social Europe, Final Report VT/2018/032, 2020).

[152] R Bregman, *Humankind: A Hopeful History* (London, Bloomsbury Publishing 2020).

[153] BA Groen, MJ Wouters and CP Wilderom, 'Employee Participation, Performance Metrics, and Job Performance: A Survey Study Based on Self-Determination Theory' (2017) 51 *Management Accounting Research* 5.

[154] S Viete and D Erdsiek, 'Mobile Information Technologies and Firm Performance: The Role of Employee Autonomy' (2020) 51 *Information Economics and Policy* 100863.

regard, technology should be used in an emancipating fashion in order to better adapt workloads and methods to individual needs and preferences.[155]

Co-determining both tasks and objectives may prove particularly beneficial for businesses, as workers are in the best position to define internal rules due to their vast knowledge of operational practices. The parallel involvement of the manager ensures that the developed metrics align with the broader organisational strategy. In short, the active participation of workers offers two types of advantages. First, given the correspondence between the designer of the assessment model and the evaluation subjects, noisy metrics that imperfectly signal effective conduct can be excluded. Second, due to the peer knowledge of the framework, workers are less inclined to game it as their colleagues would likely respond reciprocally. When autonomy, mutual trust and competence are all safeguarded, workers feel empowered 'to improve the measurement properties rather than risk the imposition of metrics that poorly reflect the operational characteristics of their work'.[156] Harnessing their full potential might require employees to be provided with appropriate decision-making rights concerning when and where work is completed. From a theoretical perspective, technology-enabled flexibility might increase employees' efforts and enhance their performance through job enrichment, thereby boosting work capacity and forging a positive social identity.[157]

In several contexts, technological devices fully embody a means of consistently exercising power according to a logic of productivity enhancement, whose goals and benchmarks are only co-determined between labour and management to a very limited extent. When new practices or digital tools intended to replace bosses in the all-encompassing spectrum of employer functions are introduced with the sole purpose of cost reduction, their reception by employers turns out to be negative, while it adversely affects workers' overall commitment to the organisation. By contrast, when technologies are adopted in order to improve the overall work experience and enhance employees' wellbeing, such methods have been received positively and had a positive effect on workplaces. In an 'autonomy-supportive context',[158] allowing more self-determination in terms of selecting meaningful outcomes and the means of achieving them positively correlates with successful performance.[159] When it comes to mitigating the dominance of companies, building worker power is essential to attaining a future characterised by shared prosperity. Circularly, empowering workers represents a concrete way of promoting tasks that face a lower risk of substitution.

After minimising the catastrophic narrative of mass joblessness thanks to more persuasive analyses, the overarching objective of this chapter has been to demonstrate that digital automation is unexpectedly leading to the augmentation of organisational, control and disciplinary prerogatives in both conventional and innovative sectors.

[155] V Cirillo, M Rinaldini, J Staccioli and ME Virgillito, 'Technology vs Workers: The Case of Italy's Industry 4.0 Factories' (2021) 56 *Structural Change and Economic Dynamics* 166.

[156] Groen, Wouters and Wilderom (n 153) 10.

[157] Viete and Erdsiek (n 154).

[158] SC Rigby and RM Ryan, 'Self-Determination Theory in Human Resource Development: New Directions and Practical Considerations' (2018) 20 *Advances in Developing Human Resources* 133.

[159] L Manganelli, A Thibault-Landry, J Forest and J Carpentier, 'Self-Determination Theory Can Help You Generate Performance and Well-Being in the Workplace: A Review of the Literature' (2018) 20 *Advances in Developing Human Resources* 227.

At the same time, it has assessed the potential of technologies when it comes to developing an emancipating new work environment in which agency is encouraged. Advanced technologies should arguably be designed and implemented in such a way as to support workers, not to 'conspire' against them. Hopefully, the future of work will be built around task autonomy rather than around job automation or, even worse, employer power augmentation. Indeed, the direction of the technological transformation of the labour market is not predetermined: the goal should be to foster a human-centred workplace in which game-changing technologies support rule crafting rather than rule adherence, thereby enabling authentic spatial, temporal and decision-making agency.