

Boss ex machina: employer powers in workplaces governed by algorithms and artificial intelligence

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Summary: 1. Introduction: wiring the labour market. – 2. The functions of managers and the end(s) of the employment relationship. – 3. A brief taxonomy of game-changing workplace technologies. – 4. Augmented powers versus upset limits: the role of data protection and equality law in complementing employment legislation. – 5. Final remarks.

1. Introduction: wiring the labour market

Contrary to alarmist forecasts concerning a potential “future without work”, modern technologies are not rendering human labour redundant (Estlund 2021). Yet, while game-changing innovation is finding astonishing ways to replace dangerous, repetitive and tedious tasks, technologies are arguably making many jobs less enjoyable by exerting considerable pressure on their content, value and availability. This reality should prompt researchers and policymakers alike to broaden their perspectives and consider the qualitative rather than the quantitative dimension of the digital workplace revolution.

The ongoing transformation calls into question the rules and limits that regulate the exercise of employer powers, which were designed during times that predate the advent of algorithms, one of the new vectors that are currently rapidly reshaping workplaces (Wood 2021). Indeed, data-driven tools are helping to intensify the position of upstream authority retained by managers, while at the same time they are severely constraining workers’ agency by introducing implicit disincentives and overt guidelines that shape behaviours and force compliance in an opaque manner. As a result, workers are forced to operate in a constrained environment where critical contributions are discouraged in favour of adherence to rules (Veliz 2021).

Over the last decade, much ink has been spilled in relation to the appropriate classification of platform workers, with debates raging as to whether they are employees or self-employed and what kind of protection they are entitled to. This book presents a thorough overview of the manifold legal challenges exacerbated

by the emergence of labour platforms at both the individual and collective levels. Although the European Union's (EU's) institutions have now decided to engage in an ambitious attempt to improve the working conditions of gig workers,¹ it will take time to address the present conundrums. Meanwhile, after years of bewilderment, several courts in countries across Europe have stated that classical domination can also be applied by means of technological tools, that is, artificial intelligence (AI) and algorithms have been recognised as mechanisms for imposing employer powers on workers.

While case law is especially fact-dependent, and while not all platforms are the same, it must be acknowledged that the main legacy of “gig work” can arguably be described as both a “mutation” and an “augmentation” of managerial authority, which has been achieved thanks to several digital techniques and design features. Here, think of customer reviews being used to assess workers' performance, accelerometers on smartphones being adopted to monitor their driving behaviour, random or regular screenshots being taken to verify their compliance with instructions issued by clients or time-tracking apps being used to measure the number of hours worked and prevent cyberslacking (Ivanova *et al.* 2018).

In short, platform work will likely be remembered as a testing ground for the technologies and practices that are currently spreading across the labour market in both ordinary and innovative sectors (Borzaga 2021). The COVID-19 pandemic has, in turn, resulted in a widespread *platformisation* effect felt by many blue- and white-collar workers, who are now required to access buildings after satisfying facial-recognition scanners, self-report the time spent on a project for billing purposes, share health-related data with third-party applications (apps) and resort to the use of collaborative platforms to work with far-flung colleagues.

The volume, variety and scope of the current tectonic shift towards the datafication and wiring of the workplace require labour lawyers to reassess the concept of employer powers and their heavy theoretical baggage. The emergence of algorithmic management practices, namely the delegation of human resources (HR) functions to devices enabled by AI and algorithms, is placing a strain on existing regulatory frameworks, which were designed for professional settings where managerial authority was exercised in a direct, open and immediate manner. Rather than viewing the digital transformation from the perspective of worker classification litigation, this chapter aims to examine the alteration in both power dynamics and the information imbalance (Zuboff 2019).

From a legal standpoint, one question worth asking is whether authority today is the same as authority in the past. To tell the truth, the present imbalance is not a genuine novelty. In the next section, the existence of managerial prerogatives will be presented as the justification for the contract of employment. Hierarchies have

¹ Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work, COM(2021) 762 final of 09.12.2021.

always been a feature of professional contexts (Muehlberger 2005). In contemporary workplaces, however, information asymmetries are increasingly and unprecedentedly tilted towards data holders and away from data subjects. The data collected and processed by ubiquitous technologies or even self-reported by workers allow managers to devise new organisational strategies when it comes to targeting job adverts, recruiting new staff members, setting remuneration, awarding promotions, assessing productivity and even firing workers. Such changes have been accompanied by the unstoppable growth of automated decision-making systems (ADMSs), which are now in charge of the management of both public and private administrative processes (Rogers 2020).

Is the existing legal framework appropriate for algorithmic bosses? What if technology ends up disrupting the traditional limits of the legitimate exercise of managerial powers? To answer these questions, it is crucial to reassess the foundations of the boss-worker pyramid. By means of dynamic progress, a varied combination of employment law instruments and resources derived from other close legal fields have long alleviated the risk of managerial prerogatives extending beyond the extent deemed acceptable in liberal societies. In Italy, for example, the Civil Code of 1942, the Workers' Statute of 1970 and a number of other special laws were primarily designed for this purpose (Tullini 2021). At the same time, collective autonomy has contributed to the establishment of boundaries that employers and bosses cannot exceed (Bavaro 2021).

The overarching goal of this chapter is to determine whether digital automation, which can be broadly understood as the adoption of digitised instruments and solutions in the workplace, has resulted in the augmentation of the organisational, control and disciplinary prerogatives of employers, managers and supervisors. Prior to validating the hypothesis of the magnification of powers, which gives rise to what we call *boss ex machina*, it is worth examining the spectacular extravagance of the contract of employment. In fact, this legal template is tasked with functionally enabling an organisation in which one private party is permitted to “command and control” the other, with the latter party being subject to such upstream authority in exchange for economic security and employment stability.

In modern societies, this arrangement has been tolerated due to being considered an effective means of upholding efficiency, while at the same time, its excesses have been mitigated in order to implement the principles of human dignity, equality, good faith, due process, proportionality and reasonableness. If viewed through the lens of power, the employment relationship is structurally ambivalent (Supiot 1994) because it both enables a condition of employer supremacy and tones it down through mandatory provisions, process-based restraints and collectively negotiated counterweights. This entire system of “controlling factors” is currently experiencing sustained stress. What is strikingly different from the past is the fact that power can be wielded without the limitations inherent to human bosses, whose traditional authority had to be exercised within unavoidable constraints.

Using plain language, this chapter adopts an analytical-descriptive approach and, after these introductory remarks, is structured into four sections. Section 2 reflects on the apparent aims of the employment relationship by disentangling the meaning of the dominant position held by employers. Building on this, Section 3 catalogues the most widespread technologies currently invading the workplace and argues that, despite their heterogeneous usages, the common denominator is the possibility of capturing and elaborating information that can be used to support managers in making executive decisions. Section 4 establishes the perils of the augmentation of managerial prerogatives through the adoption of ADMSs. Taking a multidimensional approach, it also introduces possible remedies from the neighbouring areas of data protection and non-discrimination law that could be read in conjunction with employment legislation to tame these rampant algorithmic bosses. Section 5 wraps up the chapter and offers some concluding remarks.

2. The functions of managers and the end(s) of the employment relationship

The ongoing digital transformation is altering the structure of work relations, rather than directly affecting the overall job count. Although the hypothesis of the soon-to-be end of work has been convincingly refuted by many labour economists (Organisation for Economic Co-operation and Development [OECD], 2019), the end(s) – understood as the purposes – of this legal institution are worth examining at a moment when the employment relationship is said to be facing obsolescence due to the growth of unorthodox company settings that both privilege external contracting over direct employment and impair the ascription of employment-related responsibilities while continuing to retain a dominant attitude.

This section presents an overview of the technical and economic tasks of employers and managers. Paradoxical though it may sound, a significant part of the workforce is now experiencing “loosened” forms of hierarchical power due to being free to organise their schedules and perform their duties remotely and independently (Del Punta 2018). By contrast, a portion of workers are facing the intensification of managerial prerogatives due to the need to obey new bosses hidden beneath the veneer of innovation (Falsone 2021). Independent contractors are increasingly being subject to the degree of authority once reserved for employees (Countouris 2018). Thus, the classical dichotomy between employment and self-employment no longer offers an unfailing yardstick for defining the scope of employer powers.

While the notion and boundaries of the employment contract or relationship have attracted significant attention and generated widespread discussion in recent years, mostly due to the intense litigation strategy pursued by (misclassified) wor-

kers in the platform economy, the justifications and aims of this contractual format have been explored to a much lesser degree. By shifting the perspective, it is possible to consider this issue by examining the powers exerted by entrepreneurs over the workforce.² Undeniably, as illustrated by dogmatic analyses, workers' subjection to employers' domination represents the hallmark of the employment relationship, alongside the duties of obedience, loyalty and cooperation, which shape an uncommon arrangement between private parties (Collins 1986).

So what do bosses do? Vested with ample latitude to issue orders, monitor compliance and punish recalcitrant or deviant behaviours on the part of workers, bosses unmistakably govern the workplace. In nearly all jurisdictions, a party to the employment contract is legitimately entitled to exercise unilateral authority over the other contracting party with the aim of efficiently attaining organisational objectives. Almost a century ago, Coase (1937, 388) observed that, within a firm, endless market transactions are substituted by «the entrepreneur-coordinator, who directs the production». In a similar vein, Edwards (1982) clarified how workplaces are ruled from the top down because hierarchies are considered more profitable than ephemeral arrangements in the market. Upon closer inspection, the increase in organisational costs linked to direct employment is compensated for by the possibility of exercising fully fledged managerial authority (Aloisi-De Stefano 2020a).

In short, the employment relationship has traditionally been seen as a private governance structure with a neat division between task designers and task executors (Collins 1986). To understand the relationship's essential socio-economic functions, it must be kept in mind that exceptional authority is conferred on the person of the employer, who is able to leverage wide discretion in terms of decision-making concerning matters that were not agreed upon at the moment the contract was entered into. As a result, in contractual terms, the debtor (i.e., the worker) is bound to suffer any changes in the terms without the possibility of giving or denying consent – an exception to general legal principles which postulate that any alterations made to a contract are invalid unless agreed upon by both parties.

An employment contract is considered “incomplete” by default because it is expected to last for a certain period of time. Therefore, reaching continuous agreements on all aspects of the contract in light of the changing needs of the employer would not prove cost-effective. At the same time, it would likely prove impossible to specify all contingencies in advance (Williamson 1985). In this scenario, the employee agrees to follow the orders of managers, thereby giving open-ended consent. Thus, transaction costs, that is, the costs incurred when it comes to acquiring information, negotiating terms and conditions and enforcing the provi-

² In this chapter, I use the words “entrepreneur” and “employer” interchangeably. The same is true of “manager” and “boss”.

sions of agreements, are reduced within the firm because formal and hegemonic powers replace both time-consuming negotiation and price-mechanism governance.

From an organisational perspective, the consequence of all this is the creation of an atmosphere of internal flexibility, widely considered a cornerstone of the employment relationship, thanks to which managers can adjust processes in order to accommodate production needs. Authority makes it possible to achieve cooperation among parties through a single scheme that entrenches a set of evolutionary conditions. Interestingly, it is often overlooked that such an arrangement stimulates labour productivity by fostering an environment of collaboration that upholds individual and corporate performance and increases competitiveness (Deakin-Fenwick-Sarkar 2014). When viewed in this way, subordination is the result of the contract of employment, with its socio-economic task being the realisation of the employer's economic interests. A key consequence is that the contract of employment enables the existence of the modern undertaking (Persiani 1966; Williamson 1981).

Such a reading of the intended purposes of the contract of employment partially disproves or, even better, counterbalances the die-hard assumption according to which the primary (if not exclusive) purpose of employment regulation is to protect workers, who are recognised to be in an inferior bargaining position. This is a truism in the majority of cases, mostly due to certain structural conditions such as the monopsonistic nature of the labour market (Daskalova 2018), whereby buyers (employers) outnumber sellers (workers) and can, therefore, set terms and conditions that maximise their economic benefit. Thus, reinforcing the bargaining position of workers in both the market and the relationship with their employers represents a clear objective of modern social protection. However, this remedial function of the contract of employment says very little about the condition of supremacy that is reserved for employers in all jurisdictions, a legal determinant that used to represent a distinguishing feature between employment and self-employment.

As will be discussed in subsequent chapters of this book, several courts, including the Court of Justice of the EU, have been asked to verify the presence and intensity of such power in order to demonstrate the existence of an employment relationship in cases in which the contract's label was inconsistent with the actual circumstances of the performance execution in light of the "primacy of facts" principle (De Stefano *et al.* 2021).³ In recent years, cases concerning the platform economy have again made it clear that employment status is often rejected to avoid the obligations and costs that come with it, while its main advantages are

³ Opinion of Advocate General Szpunar delivered on 11.05.2017, *Asociación Profesional Elite Taxi v Uber Systems Spain* – Request for a preliminary ruling from the Juzgado Mercantil de Barcelona, para 52.

replicated by extra-legal mechanisms that allow the employer to occupy a position of domination (Tomassetti 2016).

The key source of authority is, however, the legal framework. For the sake of simplicity, managerial prerogatives can be conventionally unboxed into three complementary and mutually reinforcing roles, namely the powers to direct, monitor and discipline the workforce (Aloisi 2022). Direction concerns setting what needs to be done in what order and in what time frame by issuing top-down instructions, while monitoring involves supervising and assessing workers' performance in order to verify the correspondence between the issued orders and their actual implementation. In addition, discipline defines the system of sanctions and rewards intended to elicit collaboration and enforce compliance. Regardless of the means used to wield them, these powers operate jointly and pursue the coordination of economic factors.

A common misunderstanding involves viewing these powers as watertight compartments. On the contrary, they all represent a continuum and are functionally intertwined. Despite certain domestic specificities, a relatively uniform model in this regard can be found across jurisdictions in both civil and common law systems. There is no doubt as to the allocation of powers. As argued elsewhere (Aloisi 2022), employers can monitor and redeploy work tasks constantly and down to every single action. Workers can be transferred to different locations and assigned different duties to those for which they were hired. They can also be assessed prior to and after recruitment, admonished for corrective reasons and even dismissed under certain circumstances and following a specified procedure (Perrulli 2002).

The employer is the holder of this multiform power and can delegate its exercise to managers and supervisors. The latter, while still subject to her authority, can rule their colleagues on behalf of the employer. Article 2086 of the Italian Civil Code states that «the entrepreneur is the *head of the business* and her collaborators *hierarchically depend on her*» (emphasis added). 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)».⁴ Employers are provided with broad, albeit not completely unfettered or arbitrary, discretionary power. This arrangement spurs on both adaptability and versatility, thereby guaranteeing responsiveness to the ever-changing natures of socio-economic contexts (Rönmmar 2006).

Make no mistake: this power is not limitless (Marazza 2012). More specifically, sticking to the three-dimensional notion of authority, direction must be executed in line with workers' professionalism and without leading to demotion practic-

⁴Article 2094 of the Italian Civil Code specifies that «a subordinate employee is a person who binds herself, for remuneration, to cooperate in the enterprise by contributing her intellectual or manual work, in the employment and under the management of the [entrepreneur]».

es. In several countries, including Italy, worker representatives must be consulted prior to the installation of surveillance tools, and they can also veto their adoption (Aloisi-Gramano 2019). Any data that are collected in violation of this codetermination paradigm or inconsistently with data protection provisions cannot be used as an evidentiary instrument during a disciplinary procedure (Otto 2016). Based on the gravity of the infringement, failure to fulfil the duties of loyalty and obedience may give rise to the application of disciplinary sanctions, the most severe of which is dismissal. Employees can be lawfully terminated in all EU jurisdictions, and recent reforms have even streamlined the remedies for unlawful dismissal, although procedural and substantive rules must still be followed (Collins 2021).

In the peculiar relationship between employers and workers, some top-down elements prevail in a unidirectional sense. Yet, various institutions, principally those specified by labour and employment regulations, have historically counterbalanced the hegemonic position of employers and supervisors with a series of individual and collective guarantees. In a nutshell, several types of legal ammunition can be deployed to reduce the level of unilateral decision-making. These intrinsic limits serve two purposes. First, to make authority consistent with the constitutional principles enshrined in modern democracies. Second, to design a process that is predictable, transparent and contestable. This should render the exercise of power accountable, reasonable and rational in the eyes of those that are subject to it and, more broadly, from the perspective of individuals and entities who hold a legitimate interest in its exercise.

Algorithmic management is poised to upset this model, as it allows employers to dodge legal rules intended to limit the scope of managerial prerogatives. The “authoritarian” face of the employment relationship, which is now facing the scrutiny of judicial bodies and academics (Anderson 2017), will be further exacerbated without the prompt activation of countermeasures tailored to a type of authority that is far less sophisticated, intrusive and omniscient than data-driven bosses. This suggests a rather intriguing research question: how can controlling factors premised upon a more analogue form of authority be adapted to deal with algorithmic bosses?

One preliminary conclusion is that power is shedding its skin and undergoing a “genetic variation” in its scope and shape. Moreover, a non-negligible movement from centralised decision-making toward scattered and outsourced centres of power has taken place, often involving co-workers and even customers (Rosenblat-Stark 2016; Levy-Barocas 2018). In addition, given this transformation, the activation of limits to whimsical decision-making will not prove straightforward, as the boundaries of human powers can be easily circumvented by means of technical devices able to bring command-and-control power into intimate spaces, non-working time and non-professional tasks. Thus, it is worth exploring whether mandatory and collectively negotiated rules that have been calibrated with regard

to the human-based exercise of power are resilient enough to provide a first line of defence against abuses arising from ADMSs.

3. A brief taxonomy of game-changing workplace technologies

Nowadays, AI and algorithms are everywhere. For instance, they handle your email spam folder, select “recommended” movies on streaming platforms and match you to the best available e-commerce offers. Increasingly, thanks to ubiquitous technologies and strong computing power, AI and algorithm-driven tools are used to complete actions once performed by humans. Such tools are implemented to a massive degree in public administration, welfare programmes, university admissions, as well as criminal justice and predictive policing. However, the workplace is the arena where the rise of what labour lawyers term “algorithmic bosses” is revealing its most contentious face (Adams-Prassl 2019).

Almost all company choices concerning the management are supported by data-driven instruments. How can performance bonuses be distributed in a competitive way? How can workers be matched to the tasks that they are most proficient at executing? How can diverse and balanced teams that combine heterogeneous skillsets to ensure bulletproof outcomes be compared? In the case of a restructuring process, how can it be ensured that the most committed workers remain with the company? Managers are striving to learn the solutions to these quotidian dilemmas, and AI and algorithms may have the answers (not necessarily the right ones).

AI and algorithms can be defined as instructions for achieving a programmed goal on the basis of given premises thanks to probabilistic evaluations of datasets. They can be more or less complex according to the variables that they are fed with, and they often lack volition as they pursue a goal that has been “taught” to them by programmers, providers or end users. In other cases, thanks to machine-learning (ML) features, algorithms can select meaningful outcomes with a certain degree of autonomy and minimal human oversight by detecting patterns in existing data in order to build models that predict future outcomes. ML tools can shape conduct in changing situations (Lee *et al.* 2015). Still, contrary to the widespread misunderstanding, there are always humans behind algorithms, and they are not absolved of responsibility in the case of unlawful results, privacy infringements or discriminatory impacts, not even in the case of ML techniques (Yeung 2017).

From a labour law perspective, the key activity performed by both AI and algorithms, at least for the time being, involves supporting humans in making decisions or deciding on humans’ behalf in a limited number of situations. The umbrella term “algorithmic management”⁵ can be used to refer to new HR practices

⁵Other authors use alternative expressions such as “management by algorithms”, “people analytics” or “workforce analytics” (Dagnino 2017).

that leverage several AI-supported pieces of work equipment and techniques that help to manage, evaluate and discipline workforces. Such functions would not be possible without the near-constant and wide-ranging process of data collection and processing that represents the starting point for inferential analytics, that is, the ability to deduce the traits of the workforce by, for example, testing hypotheses and deriving estimates (Kellogg-Valentine-Christian 2020).

The “assistance” or “replacement” by algorithmic modes of governance occurs throughout the entire cycle of workplace interactions. To this end, data constitute the most critical underlying infrastructure that allows for the operation of this new model of workplace governance (Aneesh 2009). Personal data are collected from myriad devices and then analysed and repurposed for a broad range of roles, thereby allowing for automated or semi-automated decision-making. Moreover, the dizzying blurring of personal and private lives offers the opportunity to blend professional information with sensitive data, resulting in a fishbowl-like situation where employers can observe, infer and deter human behaviours to an unparalleled extent.

Another fundamental shift is also noticeable. For algorithms to work in the most efficient way, «data need to be collected from different sources, which implies that almost every worker’s activity is, in principle, to be subject to monitoring and tracking» (De Stefano-Taes 2021, 3). The temporal and spatial limits of capturing data are increasingly crumbling, as it is now technically feasible to read personal emails and monitor the geolocation of workers thanks to company Global Positioning System (GPS)-equipped tools. In addition, fitness trackers/smart-watches and sleep-monitoring devices can harvest highly sensitive information and share them with employers in the context of corporate wellness programmes or insurance plans encouraging healthy lifestyles. This granular knowledge confers a God-like perspective on employers, who can use software to measure workers’ productivity, commitment and engagement.

This section presents a catalogue of both physical and immaterial tools (e.g., hiring platforms, wearable sociometric badges, self-reporting dashboards, collaborative environments and various surveillance devices) that can be considered a precondition for the exercise of power in today’s workplaces. Their impact on workers is twofold. First, they directly change and redesign the tasks employees currently perform. Second, they increase the demand for labour in jobs and industries that are more technologically advanced (Petropoulos 2018). In nearly all cases, these tools appear innocuous, although new risks are emerging.

The adoption of algorithmic tools can be described in chronological order by looking at all of the phases of employment relationships (Mateescu-Nguyen 2019). Several tools capable of making predictions are integrated throughout the (automated) hiring process in an effort to streamline it, especially when hundreds of candidates are likely to apply (Agrawal *et al.* 2018). Employers begin by attracting potential candidates to the vacant role through targeted advertisements,

job postings and individual outreach. Then, they can easily sift through résumés, manage the subsequent steps in the application process, run background checks and conduct remote interviews. As a result, the entire hiring “funnel” can be outsourced to platforms that replace HR managers in conducting this critical activity (Bogen-Rieke 2018).

Traditionally, workers have been vetted before being hired in order to assess their attitudes and ensure that they are a proper fit for the professional community they may be about to join. Moreover, by combining information on skills with the available data concerning earlier successful applicants, workers are selected on the basis of their conformity with previous cohorts (Ajunwa 2019). During the second phase, candidates can go through remote interviews intended to capture and process their facial expressions, tone of voice, use of specific words, sentence length and talking speed. In this case, the quantitative leap lies in the possibility of analysing a large amount of data to infer personality traits that are not visible.⁶

Were we to write a brief history of digital HR, we would note that automated scheduling systems first appeared in sectors such as household services, trade and consultancy in order to optimise the allocation of shifts. Amalgamated data are now processed to draft schedules at short notice and based on real-time preferences. From a labour law perspective, this system of tacit penalty and reward is also expected to enforce compliance, thereby subtly reconfiguring interactions. Thus, workers’ choice is severely hindered by *prescriptive* tools that, albeit in a sophisticated fashion, limit their agency. This issue has proven pivotal in demonstrating the existence of an employment relationship in platform work litigation, although it is now a shared characteristic of larger segments of the labour market.

In industrial sectors, advanced robotics allows tasks to be performed almost independently, with more flexibility and accuracy than traditional robots due to sensors and a very high level of dynamic programming (Eurofound 2018). Not only can they be easily reprogrammed, but they will also interact and respond in an autonomous way if there are changes in their environment. In addition, these robots are manufactured in such a way that they can adapt to and collaborate with humans, meaning that they can perform the more burdensome physical activity and humans can focus on the knowledge-based aspects, if they are not busy fixing dysfunctional machines or removing frictions.

“Logged” robots and Internet of Things (IoT)-enabled devices rely on sensors to collect information (Hildebrandt 2015) and connect manufacturing settings to the digital world. This helps to compile data concerning the production process in order to make it more efficient by avoiding bottlenecks and waste. Other emerging tools include wearable devices that have different types of applications in both manufacturing and services (Eurofound 2020). For example, these devices can

⁶ Companies such as the USA-based HireVue analyse the tone used by candidates and their facial expressions as they are recorded answering similar questions (Manokha 2021).

“boost” human capabilities, overcome physical limitations and increase both safety and productivity. They allow for safety hazards and potential health issues to be detected in advance. In large factories, smart badges have been introduced, and some even go so far as to inform managers if an employee appears distracted.

Having said that, all work-related assignments are mediated by digital gadgets and completed through infrastructure that creates “time-stamped logs” of activities, combining web history with productivity rate or online behaviours with collaboration trends (Bales-Stone 2020). Digital fingerprints can be traced from a broad array of social media accounts, while holiday pictures, birthday parties, hateful online statements, political affiliations as well as health and wealth conditions are just a click away and can be filtered to help fine-tune decision-making (Aloisi 2022). Nothing goes unnoticed.

Surveillance is the standout activity when it comes to data-driven tools. It can be conducted to improve employees’ work processes, although it can also lead to intrusive practices. Increasingly, companies are using different types of technologies to monitor their employee’s emails, phone calls, internet browser histories and body movements through GPS or other sensors. Software can also take snapshots of employees’ computer screens. In many cases, the monitoring and appraisal activities are outsourced to the final customers, who can influence workers’ virtual reputations by means of ratings and feedback. While surveillance empowered by technology offers many advantages, including speed and efficiency, it can place immense pressure on workers, who find themselves in a panopticon condition.

Tangibly, the COVID-19 pandemic has offered the opportunity to develop and deploy new monitoring practices, with the emergency situation being leveraged to design increasingly intrusive equipment under the guise of, for example, ensuring compliance with new health and safety protocols (Aloisi-De Stefano 2022). While most practices were destined to last for only a limited duration, many of these emergency provisions have already become structural. For instance, in the case of remote working arrangements that were reluctantly adopted in an effort to limit the risk of contagion, several monitoring tools have been deployed, such as time-tracking devices and covert cameras, to satisfy the control mania of anxious bosses. In addition, scattered teams resorted to the use of cloud-based collaborative platforms for project administration, while employment interviews and networking events migrated online due to pandemic-related travel restrictions.

Essential workers in hospitals, shops and logistic nodes were provided with anti-virus wearables. Companies introduced alerts to notify employees of sanitation shifts around the clock, GPS-integrated applications to track employees’ whereabouts or enforce hygiene guidelines, radio-frequency identification (RFID) to optimise occupancy rates (scheduling software to gauge time attendance and ensure group turnover) and notifications to urge compliance with hygienic best

practices. The pandemic has *normalised* workplace extensive monitoring in many instances, frequently even taking it to the next level (Aloisi-De Stefano 2022).

All workers are now exposed to some form of omnipresent, real-time and relentless surveillance that is not confined to the workplace and working time. Indeed, there has been a significant change in the locus and temporal scope of control (Katsabian, 2020). Due to big data analytics correlations, team dynamics, collaboration flows and client preferences can all be easily uncovered. Surveillance is instrumental in managing workers as efficiently as possible, which means workplace technologies are used for organisational purposes. By using such tools, organisations can be better prepared to make informed decisions when it comes to planning incentives, redefining internal flows and phases, creating mechanisms for promotion and providing instant feedback.

However, by replicating outcomes in a loop-like fashion, AI and algorithms may solidify human prejudices and discriminatory biases. This may lead to the aggravation of societal inequalities (Noble 2018), which could provoke political unrest. What is worse, given their obscure nature, such models may limit the understanding of employers' strategies, thereby having a chilling effect on employees' involvement. They may also leave workers in the dark and, therefore, prevent collective action. Despite this, thanks to the widespread availability of information compounded by the notification and access rights laid down in various data protection instruments, algorithmic decision-making can be interrogated in order to expose and curb its shortcomings. A wealth of multi-source legal remedies can be pre-emptively mobilised at the business level and in court to ensure transparency, accountability and contestability.

4. Augmented powers versus upset limits: the role of data protection and equality law in complementing employment legislation

It must be admitted that, prior to offering economic and contractual security to workers, labour and employment regulations authorise sizeable managerial powers (De Stefano 2020). At the same time, legal institutions are designed to erase the blemishes typical of human bosses. The previous section presented day-to-day examples of the process of augmenting managerial prerogatives, as spurred on by the widespread adoption of probabilistic decisional models, which render authority seemingly less intense but more distributed and deceitful. Algorithmic management provides a stark illustration of the new difficulties associated with limiting employers' exuberance. At first glance, these modern technologies profoundly displace and disrupt the current set of counterweights.

Ultimately, paradigmatic employer-worker relations are reconfigured both within and across organisations. Workers are witnessing the anomalous intensification of employers' powers and the parallel reduction of their self-deter-

mination, that is, the ability to define a goal and independently attain it, which has cascading effects on job satisfaction. Automated instructions are undoubtedly more persuasive, while the constant threat of disciplinary action discourages unanticipated initiatives. Such constraints can lead to burnout and increased staff turnover, thereby causing organisations to lose accrued know-how and skills developed over time.

Perhaps naively, this aspect of the digital transformation is often presented as an opportunity to reduce arbitrariness, overcome disparities and enhance objectivity. Yet, there is clear evidence that the new organisational models enabled by technologies result in the exacerbation, not the avoidance, of key shortcomings ordinarily embedded in human decision-making. In fact, it is not even clear if these models can significantly increase productivity, as in many cases data can prove erroneous and generate unintended results or silent resistance. In addition, whereas the current paradigm has deliberately sought to strike a balance between empowering authority and preventing abuses of managerial dominance, the ongoing quantum leap may dismantle the canonical limits on employer powers.

When a technological artefact replaces human bosses in terms of all their critical functions, both substantive and procedural guardrails are displaced because, at first glance, they are ill-equipped to address modern sources of top-down authority. At least three main risks can be detected when analysing this distorted power imbalance. First, the intensification of surveillance and managerial domination may severely heighten the pace at which tasks are completed, an issue that calls into question health and safety regulations, including aspects related to physical and psychosocial implications (Todolí Signes 2021). Second, workers are rarely able to understand and correct decisional outcomes when they are unaware that such outcomes are in place, how the technocratic systems works and which metrics are factored into them.

Third, the lack of transparency jeopardises the principles of fairness and accountability in relation to the competitive attribution of entitlements at the workplace level, including slots, promotions, incentives and bonuses. Thus, discriminatory impacts are profoundly aggravated (Barocas-Selbst 2016). Upon closer inspection, algorithms lack both the flexibility and the accountability associated with human decision-makers (Acemoglu 2021). Indeed, the inherent characteristics of code-based managerial systems render them too rigid to diverge from standardised, pre-uploaded solutions (Yeung 2019). Moreover, the presumed accuracy of algorithms results in the endless reproduction of hidden flaws, biases and disparities without the possibility of arresting the downward spiral (Dignum 2021).

Given the magnitude of these challenges, a strategy based on compartmentalised legal remedies is bound to fail. Rather, it is vital to adopt a multidimensional approach that combines checks and balances from different fields. Case law at the national level has recently confirmed that labour courts, tribunals and Data Pro-

tection Authorities (DPAs) are exchanging knowledge and techniques in an effort to enhance their abilities to counter the aggrandisement of algorithmic power (Aloisi 2021). In fact, the last few months have been characterised by judicial activism compounded with union-led strategic litigation that has contributed to piercing the veil of data-driven management's opacity. A number of preliminary victories and, more broadly, the enhanced awareness of how ADMSs work should provide the momentum necessary for further developments.

In Italy, a judge in Bologna found a scheduling algorithm devised by Deliveroo, a major food-delivery company, to be indirectly discriminatory. Despite the technical feasibility of excluding certain parameters, an automated sanction (an apparently neutral practice without solid justification, to use equality law's jargon) put workers with a protected characteristic at a particular disadvantage.⁷ The *soi-disant* "blind" system was unable to treat unlike cases differently and so ended up punishing workers who did not show up to work because they were on strike (or because they were sick, had a disability or had to assist a disabled person or a sick minor, etc.).⁸ These workers were downgraded when it came to booking better-paid jobs. As a result, their opportunities to access tasks and orders were significantly reduced. In this case, the uniform application of the implicit sanctioning model had a marginalising effect on workers who were exercising constitutionally protected rights (Barbera 2021).

In 2021, workers supported by a union in the United Kingdom filed lawsuits claiming to have been "robofired" by an ADMS.⁹ Their stories hit the headlines. The court in Amsterdam agreed that they had been denied access to meaningful information concerning the algorithms pursuant to Article 15 of the General Data Protection Regulation (GDPR) (Gellert-van Bekkum-Zuiderveen Borgesius 2021). Despite the failure to demonstrate that some practices were so significantly impactful as to fall within the scope of the GDPR, one claimant was successful in proving that an automated model for wage deduction calculation had been adopted. Moreover, workers were successful in enforcing the right to learn the logic behind the assessment as well as the specific weight criteria used in the model, according to the key provision of the GDPR (Aloisi-De Stefano 2022a). The in-

⁷ Art. 2(1)(b) Directive 2006/54/EC on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation (recast), Article 2(2)(b) of Directive 2000/43/EC implementing the principle of equal treatment between persons irrespective of racial or ethnic origin, Article 2(2)(b) Council Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation, and Article 3(b) Directive 2010/41/EU on the application of the principle of equal treatment between men and women engaged in an activity in a self-employed capacity.

⁸ Tribunal of Bologna, Order n. 2949/2019 of 31.12.2020, p. 19.

⁹ Amsterdam District Court, C/13/687315/HA RK 20-207 of 11.03.2021; Amsterdam District Court, C/13/692003/HA RK 20-302 of 11.03.2021; Amsterdam District Court, C/13/689705/HA RK 20-258 of 11.03.2021.

volved companies were ordered to disclose information concerning the decisions made, the data analysed and the assumptions justifying the final decision in order to allow workers to verify both the correctness and the lawfulness of the data processing (Kelly-Lyth-Adams-Prassl 2021). This pioneering strategy offers a glimpse of the strengths and limitations of the GDPR when mobilised in court against algorithmic abuses.

Concomitantly, DPAs have shown that it is possible to combine elements from different thematic areas in an effort to deploy measures capable of tackling this new breed of power. The Italian *Garante* issued two orders against the food-delivery platforms Glovo and Deliveroo.¹⁰ By using arguments developed by labour courts, the DPA fined the companies due to their lack of compliance with the provisions of the GDPR. More importantly, by reading data protection principles in conjunction with employment legislation, the DPA considered the lack of compliance with rules laid down in the national Workers' Statute, which applies a more protective system than the GDPR framework, as a violation of the GDPR principles concerning lawfulness and processing in the context of employment. More specifically, Article 88 of the GDPR has been interpreted as referring to national employment-related requirements mandating the involvement of worker representatives or administrative bodies as a precondition for the introduction of surveillance technologies, thereby reinforcing codetermination rights.¹¹

Nevertheless, while domestic employment legislation is pivotal to enabling prior authorisation requirements and, therefore, avoiding workers being subjected to surveillance tools that surreptitiously collect and assess data, this may prove insufficient given the massive adoption of algorithmic shortcuts. The three cases briefly discussed above clarify that the shortcomings of ADMSs can be countered by deploying holistic strategies. This means that, rather than considering algorithmic bosses' functions in isolation, lawyers must address augmented managerial prerogatives *en bloc*. Fortunately, several responsive techniques can be adopted.

The GDPR can be enforced to render automated decision-making processes manifest, reasonable, legible and assessable. While the ban on automated decision-making enshrined in Article 22 of the GDPR does not apply when this type of processing «is necessary for entering into, or performance of, a contract between the data subject and a data controller», there are binding rules concerning information, disclosure and explanation of the underlying logic of algorithms that cannot be overlooked. The rights set out in Section 3 of Article 22 of the GDPR («the data controller shall implement suitable measures to safeguard the data subject's rights and freedoms and legitimate interests, at least the right to obtain hu-

¹⁰ Italian Data Protection Authority, Ordinanza ingiunzione nei confronti di Foodinho s.r.l., 10.06.2021 [9675440]; Ordinanza ingiunzione nei confronti di Deliveroo Italy s.r.l., 22.07.2021 [9685994].

¹¹ Article 4 of the Italian Workers' Statute, Act 300/1970.

man intervention on the part of the controller, to express his or her point of view and to contest the decision» when ADMSs are in place) will become increasingly important, as confirmed by Recital 71 of the GDPR making explicit reference to the right «to obtain an explanation of the decision reached after such assessment and to challenge the decision».

In addition, Articles 13(2)(f) and 14(2)(g) of the GDPR establish the obligation to notify the data subject that she is involved in an HR «automated decision-making, including profiling, referred to in Art. 22(1) and (4)» and offer «meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject». In addition, Article 15(1) enshrines the individual right of access to the same set of data. The provision offers a reliable channel for examining the lawfulness of processing and invoking legal remedies. Moreover, this set of binding rules can be considered a procedural *prius* for shaping bias-free workplace practices and eradicating discrimination (Kaminski 2019).

Furthermore, non-discrimination law is particularly apt at capturing new forms of algorithmic-based discrimination and offering effective remedies when it comes to removing their disparate impacts (Kullmann 2018; Xenidis-Senden 2020). From a strategic perspective, thanks to the streamlined evidentiary procedure, it is possible to omit the examination of the internal content of the algorithmic management system. Without the need to even open the “black box” (Pasquale 2015), presumed victims can limit themselves to presenting facts from which it can be inferred that a lack of compliance with equal treatment rules has occurred or is likely to occur. As demonstrated by the Italian case discussed above, indirect discrimination (i.e., an apparently neutral practice that puts individuals with a protected characteristic at a disadvantage when compared with others) is poised to play a crucial role in the near future.

Despite the possibility of justifying the use of a neutral algorithmic provision as a means of pursuing an appropriate and necessary business need, employers are not insulated from responsibility in the case of measures putting a protected characteristic holder at a particular disadvantage (Kim 2017). Data-processing systems can effortlessly elaborate information such as average working hours, educational background, career consistency and retention prospects that are associable with protected grounds. The case law of the Court of Justice of the EU has already developed models for addressing discrimination by both proxy and association (Gerards-Xenidis 2021).¹² In the future, this approach will prove crucial, especially when it comes to counter inferences derived from characteristics that are not protected grounds (Kim-Bodie 2021).

It is precisely at the crossroads between data protection and equality law that a

¹² CJEU, 17 July 2008, C-303/06, *Coleman v Attridge Law and Steve Law*; 16 July 2015, C-83/14, *CHEZ Razpredelenie Bulgaria AD v Komisia za zashtita ot diskriminatsia*.

new stream of research and litigation is emerging. The rights of notification, access and explanation included within the GDPR can be used to derive information concerning the underlying logic and metrics of algorithmic management. Thanks to this data and documents such as the data protection impact assessment (DPIA) mandated under Article 35 of the GDPR that must be shared with workers and their representatives (Mantelero 2018; Kaminski-Malgieri 2020), it is even easier to bring a *prima facie* case of discrimination based on the indication of an algorithmic tool as the source of bias (Hacker 2018; Grozdanovski 2021). In such a case, the burden of proof is reversed or, at least, shared with the respondent, who is expected to prove that the principle of equal treatment has not been breached by disproving the causal link between the harm, the conduct and the protected characteristic or, otherwise, to present a valid justification that passes the relevant tests of appropriateness and necessity.

These counterweights are not intended to be merely punitive. Rather, they should be put in place to inform compliant company practices that do not fall down the rabbit hole of data-centric obsessions, thereby fostering a trust-based environment. Indeed, the routinisation of all management functions represents a challenge for organisations, especially those in which the chains of command are complex. Paradoxically, the intricacy of documenting decision-making processes amplifies the vulnerability of bosses' legal position, particularly in situations where presumptions and the reversal of the burden of proof may be in force in courts according to national standards (Gaudio 2022).

In this respect, the use of data protection instruments to obtain explanatory information concerning the underlying logic of algorithmic management is instrumental in two regards. First, it places the onus on the employing entity to deploy processes that are not only organisationally efficient but also reasonable and reportable. Second, it provides a set of rights that can be both used to contest and change the final decision and used to prepare the terrain for a grievance based on non-discrimination law. This model strengthens the importance of procedure-based law in the workplace meant to democratise otherwise authoritarian decisions (Collins 2018). Ultimately, "data protection via design" obligations are expected to inform a model of good conduct that *proceduralises* data controllers' powers (Mundlak 2014).

The recently proposed EU Directive on improving working conditions in platform work takes steps in this direction,¹³ as it enforces information duties on digital platforms with «automated decision-making systems which are used to take or support decisions that significantly affect those platform workers' working conditions». In this case, workers must be informed about the categories of decisions made, the parameters considered and their relative weights, and the motivation

¹³ Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work, COM(2021) 762 final of 09.12.2021.

behind any decision to «restrict, suspend or terminate the platform worker’s account, to refuse the remuneration for work performed [...], on the platform worker’s contractual status or any decision with similar effects».¹⁴ Although limited in its personal and sectoral scope, the proposal includes risk assessment and mitigation provisions that are consistent with a “human-in-command” approach whereby humans govern technologies and not the other way round.

The text goes so far as to strengthen the gold standard set by the GDPR. It explicitly provides for a right to explanation for a decision taken – even only supported – by automated systems that significantly affect working conditions such as access to tasks, earnings, occupational health and safety, working time, promotion opportunities, suspension or termination. All decisional options upheld by data-driven instruments would have to be presented in an accessible way so as to allow workers to challenge them (Aloisi-De Stefano 2022a). Moreover, the proposal also requires labour platforms to inform and consult workers’ representatives about algorithmic management when considering adopting or amending automated monitoring or decision-making systems.

On the basis of these recent developments, it can be predicted that the negotiation of data at work will soon take centre stage (Dagnino-Armaroli 2020). This move will prove beneficial both for workers who would be able to regain decision-related room for manoeuvre and for companies that could devise less dysfunctional ADMSs by taking into account the perspective of those exposed to them (Lee *et al.* 2021). Social dialogue, voice mechanisms and collective bargaining will all remain essential. One thing is certain: unions and businesses have a tremendous opportunity to engage with new subjects of bargaining, such as technology-coded HR policies and extensive electronic performance monitoring in the workplace, as well as with their repercussions for occupational health and safety, equality law and data protection. Codetermination represents a valuable means of enhancing workers’ agency and building trust within professional communities.

5. Final remarks

Given its potential to open up new opportunities, authentic innovation is to be welcomed, especially when it facilitates autonomy, promotes inclusiveness and alleviates existing hurdles. Yet, when digital forms of workplace governance are given too much leeway, they may erode rights from a wide panoply of legal areas and thwart productivity. If left ungoverned, evidence-based management is likely to promote unfair treatment and widen the power gap at work. The previous section explored both old and new rules that can be mobilised to tone down the pow-

¹⁴ Article 6(2), *ibid.*

er of the *bosses ex machina*, which are now invading workplaces worldwide, facilitated by a lack of forward-looking managerial strategies.

By taking a bird's-eye view, this summary corroborates the argument that labour regulation should be seen as a pendulum constantly swinging between enabling authority and preventing its abuses. Its task is twofold, since it both allows for and constrains autonomous norm creation on the part of employers that are able to pursue the interests of the enterprise without biases or capricious considerations. In particular, both the law and worker representatives are expected to regulate, support and curb the power of management. Upon closer inspection, this model aims to avoid the harms of managerial prerogative by rationalising the power to safeguard human dignity and autonomy (Young 1963; Deakin-Wilkinson 2005). Yet, it is profoundly upset by new technologies.

Accordingly, the rapid rise of algorithmic bosses provides labour lawyers with an opportunity to test the suitability of provisions from an array of fields, ranging from data protection to non-discrimination. All legal and technical solutions must be systemic and encompass complementary tools adopted on the basis of the final use of algorithms in the workplace. First, by resorting to the GDPR provisions, workers can challenge ADMSs and advocate for the transparency, verifiability, and contestability of workplace practices. DPAs are rather pragmatic in their application of the key GDPR principles, adopting employment-related rules on monitoring as a beacon of lawfulness in relation to digital surveillance and automated management. Second, discrimination law has been marshalled in court in order to contest the unfairness of company policies that result in the attribution of slots, tasks or simply the allocation of positions within the internal ranking (Xenidis 2020). To date concrete achievements have been smoothly facilitated.

If the shift towards an increasingly digitised workplace is unstoppable, the key challenge for lawyers is to enable a context in which ground-breaking technologies are deployed in such a way that more people benefit than are harmed. This endeavour requires a multi-layered approach combining employment legislation enforcement, collective strategies involving workers and their representatives and the acquisition or strengthening of digital literacy skills. Currently, the digital transformation is not equally delivered. High-skilled workers seem to benefit the most from innovation in terms of a reduction in menial and time-consuming activities, while low-wage workers are increasingly exposed to tyrannical conditions. As discussed above, this discrepancy can only be fixed by activating remedies from a wide-ranging legal arsenal in an effort to render algorithmic management accountable and free from bias.