

Regulating Algorithmic Management at Work in the European Union: Data Protection, Non-Discrimination and Collective Rights

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Abstract

In recent years, algorithmic management practices have been widely adopted by employers to monitor remote work, analyse how applicants behave during job interviews, rate workers' performance and calculate wage adjustments. As a consequence, the condition of workers being subjected to the upstream authority of managers has intensified. Employment protection legislation recognises the importance of curbing the bosses' unilateral discretionary power by deploying several controlling factors. However, the traditional guardrails have now been displaced by the transformative impetus of data-driven technologies. As a response to this challenge, several European Union law tools could be pragmatically adapted to curtail the expansion of managers' decisional leeway.

By applying a multidimensional, anticipatory and participatory approach, this paper integrates substantive and procedural rules that contribute to rebalancing informational asymmetries within workplaces and assesses the effectiveness of those rules. Using examples from case law, administrative decisions and legislative developments, it also discusses the mutually reinforcing relationship between data protection provisions and anti-discrimination measures, which renders automated decisions documentable and contestable. Beyond defensive tactics, this paper calls for the involvement of worker representatives in co-designing digital human resources policies. Indeed, as data are relational, collective bodies are uniquely placed to exchange information, raise awareness and bring claims, thereby preventing algorithmic abuses.

Keywords

employer powers; data protection; non-discrimination; codetermination; artificial intelligence; management by algorithms; right to explanation; burden of proof; EU law; digital transformation.

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1 INTRODUCTION

The ongoing digital transformation is taking unparalleled forms in contemporary workplaces. Increasingly, day-to-day functions once completed by mid-level managers are being delegated to data-driven applications capable of screening résumés, assigning jobs, assessing performances, forming teams, setting incentives and imposing sanctions. This is arguably one of the most revolutionary aspects of automation that, contrary to conventional wisdom, does not lead to widespread unemployment.¹ Rather, it promotes the gradual entrusting of decisional roles to non-human agents. Understood as a set of socio-technical practices supporting, complementing or supplanting human decision-making thanks to big data harvesting and ubiquitous computing, algorithmic management is gaining both traction in business and attention in scholarship and public opinion.²

Due to their magnitude, the challenges posed by this phenomenon span numerous thematic fields. One of the aims of labour law has always been to moderate the unilateral discretionary power of the dominant contractual party by deploying controlling factors at the individual and collective levels.³ Today, though, its ability to deliver on this key function is put under strain as a result of the expansion of bosses' decisional leeway.⁴

Too often, algorithmic management has been dissected in its constitutive phases and analysed from narrow perspectives, typically using field-specific viewpoints.⁵ In addition, the prior literature has predominantly provided retrospective or complaint-led answers. Both postures are reasonable when prompted by the need to reduce complexity and restore the victims of abuses, although they entail drawbacks that this paper aims to overcome using a multidimensional, preventive and collective approach. This research focuses on instruments capable of proactively fostering equality and accountability to curb the expansion of domination.⁶ Accordingly, the set of human resource management (HRM) practices powered by technology is addressed by considering the effects it has on bargaining and informational dynamics at the workplace level. This issue is relevant to worker-protective norms designed to 'proceduralise' the exercise of power by employers.

The principal aim of this essay is to examine the suitability of certain European Union (EU) law tools when it comes to rationalising the authority associated with the day-by-day management of professional relations. Several constraints have been introduced by

¹ David H. Autor, "Why are there still so many jobs? The history and future of workplace automation", 29 *J Econ Perspect* 3-30 (2015).

² Sara Baiocco, Enrique Fernández-Macías, Uma Rani, Annarosa Pesole, *The Algorithmic Management of work and its implications in different contexts*, European Commission, 2022; Alex J. Wood, "Algorithmic management consequences for work organisation and working conditions", JRC Working Papers Series, WP No. 7, 2021; Alexandra Mateescu and Aiha Nguyen, "Algorithmic management in the workplace", *Data & Society* (2019).

³ Otto Kahn-Freund, *Labour and the Law* (Stevens & Sons, 1972).

⁴ Matthew T. Bodie, Miriam A. Cherry, Marcia L. McCormick and Jintong Tang, "The law and policy of people analytics", 88 *U Colo L Rev* 2-79 (2016).

⁵ Alex Rosenblat and Luke Stark, "Algorithmic labor and information asymmetries: A case study of Uber's drivers", 10 *Int J Commun* 3758-3784 (2016).

⁶ Sandra Fredman, "Making equality effective: The role of proactive measures", European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, Unit EMPL/G/2 (2010).

legal norms to temper the undue expansion of hierarchy in private relationships. Troublingly, most of these countervailing forces are limited by the fact they were designed upon forms of power that were significantly different, and less sophisticated than today's technocratic authority. Yet, EU law offers solutions that may jointly contribute to rebalancing powers in workplaces.⁷ This can be achieved through a convergence towards more encompassing and dissuasive strategies. Expanding on labour law premises, this paper aims to reconnect seemingly unconnected legal domains such as data protection and non-discrimination, thanks to examples from case law, administrative decisions and recent legislative developments. To overcome the limitations of these fields, this paper uses employee involvement as a 'force multiplier' in three guises: (i) the collective negotiation of the adoption and development of algorithmic tools at work, (ii) knowledge sharing with a view to promoting fact-finding and litigation, (iii) the co-design of data-driven company practices to ensure that they are worker-centred.

The remainder of this paper is organised as follows. Section 2 briefly unravels the role of managerial prerogatives and contends that established statutory and collectively negotiated limits have been profoundly upset by the augmentation of employer powers. Drawing on examples from the field of strategic litigation, Section 3 offers a unified reading of the EU General Data Protection Regulation's (GDPR's) provisions and anti-discrimination measures, thanks to which automated decisions can be made legible and contestable, thereby eradicating algorithmic biases. Crucially, this research paper shifts the focus from the inner workings of 'black boxes' to the consequences they engender, offering robust opportunities for redress. As one downside of current strategies is the narrow conception of the two fields, this section pragmatically exemplifies techniques that promote workers' involvement in shaping, adapting and challenging HRM policies in order to close power gaps at work. Section 4 concludes.

2 THE TRANSFORMATIVE IMPACT OF WORKPLACE TECHNOLOGIES

Due to the near-constant iterative collection and processing of data, algorithmic management affects an ever-increasing number of workers who find themselves recruited, governed, monitored and fired by digital applications, whose decisions are inscrutable, unpredictable and difficult to contest using traditional resources. Algorithms have been widely adopted in factories, stores and (home) offices to impose metrics that guide and appraise performance execution. The grey literature may be blossoming,⁸ but the reporting is often anecdotal. Yet, the ongoing shift is proving challenging, even when compared with trends prioritised in judicial and policy action, such as 'platformisation'.⁹

⁷ Ljupcho Grozdanovski, "In search of effectiveness and fairness in proving algorithmic discrimination in EU law", 58 *CML Rev* 99-136 (2021).

⁸ Jodi Kantor and Arya Sundaram, "The Rise of the Worker Productivity Score", *The New York Times*, 15 August 2022, <https://nyti.ms/3B817sV>; Kevin Roose, "A machine may not take your job, but one could become your boss", *The New York Times*, 23 June 2019, nyti.ms/32d0NBV.

⁹ Antonio Aloisi, "Platform work in Europe: Lessons learned, legal developments and challenges ahead", 13 *European Labour Law Journal* 4-29 (2022).

Numerous workers are witnessing the expansion of the width, velocity and severity of the managerial prerogatives legally conferred on employers as a hallmark of the standard employment relationship (recruitment, organisation, monitoring, discipline). In addition, the traditional boss-worker pyramid is growing beyond its original boundaries.¹⁰ As a consequence, the condition of subjection to upstream authority is intensified by digital devices and stretched to the point of including even self-employed and other non-standard workers who should in principle enjoy a greater degree of autonomy.

Various inherent features render the rise of ‘algorithmic bosses’, as this new managerial model is labelled in today’s parlance, difficult to grasp. First, it concerns a slow, varied and gradual makeover that unfolds at different paces in different industries. Second, and more worryingly, this trend is almost invisible and, by definition, faceless, involving characteristics that can have a chilling effect on individual awareness and collective resistance. It also makes grievances more complex, both for those exposed to such systems and for the judiciaries required to step in. Third, algorithmic management seems innocuous, often being presented as a magic wand for solving die-hard problems related to human subjectivity, administrative bottlenecks, the absence of fairness and systematic disparities in regular workplaces. Although these assertions have been demystified,¹¹ they represent a potent narrative that contributes to the development of complaisant attitudes.

Prior to presenting solutions from the EU social *acquis* and assessing their effectiveness, it is essential to highlight the main differences between traditional authority and new forms of managerial prerogatives. The following subsections provide some concrete examples corroborating the notion of the ongoing expansion of employer powers. Such a qualitative leap becomes controversial if it displaces the rules upon which labour regulation is premised, eroding its values and reducing chances to challenge abuses.

2.1. Automated decision-making and employer powers augmentation

Algorithms can be described as complex sets of rigid instructions supported by advanced statistics and fuelled by increased computational power, which maximise efficiency with regard to assigning tasks, categorising items, targeting messages, allocating resources and forecasting events. As it is broadly understood, AI is an umbrella term covering several applications,¹² whether standalone or embedded in everyday instruments, that mimic capabilities associated with humans when properly trained using a large set of readable information.¹³ As a subspecies of AI, machine learning (ML) can autonomously develop

¹⁰ Cynthia Estlund, “Rethinking autocracy at work”, 131 *Harv L Rev* 795 (2017).

¹¹ Frank Pasquale, *The Black Box Society: The Secret Algorithms that Control Money and Information* (Harvard University Press, 2015), 212.

¹² High-Level Expert Group on Artificial Intelligence, *A Definition of AI: Main Capabilities and Scientific Disciplines* (European Commission, 2019).

¹³ Karl Manheim and Lyric Kaplan, “Artificial intelligence: Risks to privacy and democracy”, 21 *Yale J Law Technol* (2019) 106; Tambe Prasanna, Peter Cappelli and Valery Yakubovich, “Artificial intelligence in human resources management: Challenges and a path forward”, 61 *Calif Manage Rev* 15-42 (2019).

capabilities ‘by example and by doing’ and redesign procedures to pursue implied objectives in an astoundingly cost-effective and adaptive fashion.¹⁴

From a legal perspective, another piece of definitional shorthand must be introduced. The formula “automated decision-making systems” (ADMS) encompasses systems whereby discrete choices are partially or solely made by software based on probabilistic determinations. ADMS operate in a vast panoply of sectors, including education, healthcare, finance, justice and welfare.¹⁵ For the purposes of this paper, only ADMS in the field of workplace relations will be scrutinised,¹⁶ although some insights are derived from studies in close thematic clusters. Far from being merely descriptive or observational, these systems entail the possibility of predicting and prescribing conducts, thereby pressuring workers to abide by explicit or unwritten rules intended to shape their behaviours. This significantly limits autonomy and free will, the cornerstones of human agency and dignity. As will be discussed below, labour regulation has principally been developed to provide entitlements that ‘compensate’¹⁷ for the diminished level of self-determination in the ‘miniature legal systems’,¹⁸ unquestionably ruled by employers.

The growth of remote work formats spurred on by the COVID-19 pandemic has made work-related technologies commonplace, together with keystroke tracking, webcam surveillance and desktop monitoring.¹⁹ Yet, interest in non-human decision-making first arose in the context of platform-mediated work. Couriers and drivers who are dispatched and organised by digital platforms in the food-delivery, transportation and household service sectors have arguably served as a test case for data-driven governance. Several lawsuits have exposed the detailed operation of the platform companies’ business model, which is generally based on the partial delegation of decisional functions across their full lifecycle to online applications (scheduling, task allocation, remuneration, deactivation) or customers (evaluation).²⁰ Beyond the boundaries of platform work, both blue- and white-collar workers in ‘brick-and-mortar’ services such as logistics, trade and consultancy are currently witnessing the normalisation of datafication practices.²¹

¹⁴ Ronan Hamon, Henrik Junklewitz and Jose Ignacio Sanchez, *Robustness and Explainability of Artificial Intelligence – From Technical to Policy Solutions* (Publications Office of the European Union, 2020).

¹⁵ Katherine C. Kellogg, Melissa A. Valentine and Angèle Christin, “Algorithms at work: The new contested terrain of control,” 14 *Acad Manag Ann* 366 (2020). See also Karen Yeung, “‘Hypernudge’: Big data as a mode of regulation by design”, 20 *Inf Commun Soc* 118-136 (2017).

¹⁶ These practices are also referred to as ‘people analytics’. Aizhan Tursunbayevaab, Stefano Di Lauro and Claudia Pagliaria, “People analytics-A scoping review of conceptual boundaries and value propositions”, 43 *Int J Inf Manage* 224-247 (2018).

¹⁷ Ruth Dukes, “Constitutionalizing employment relations: Sinzheimer, Kahn-Freund, and the role of labour law”, 35 *J Law Soc* 341-363 (2008).

¹⁸ Hugh Collins, “Market power, bureaucratic power and the contract of employment,” 15 *Ind Law J* 4 (1986).

¹⁹ Kirstie Ball, *Electronic Monitoring and Surveillance in the Workplace. Literature Review and Policy Recommendations* (Publications Office of the European Union, 2021).

²⁰ Mirela Ivanova, Joanna Bronowicka, Eva Kocher and Anne Degner, “The app as a boss? Control and autonomy in application-based management”, 2 *Europa-Universität Viadrina ArbeitGrenze-Fluss* (2018); Karen Levy and Solon Barocas, “Refractive surveillance: Monitoring customers to manage workers”, 12 *Int J Commun* 1166-1188 (2018).

²¹ Sam Adler-Bell and Michelle Miller, “The datafication of employment: Report on surveillance and privacy”, *The Century Foundation*, 19 December 2018, [bit.ly/3wWxuUg](https://www.centuryfoundation.org/research/the-datafication-of-employment-report-on-surveillance-and-privacy/).

A prevalent misunderstanding needs to be addressed here. The fallibility of algorithms is often contrasted with the shortcomings of human decisional processes.²² This viewpoint risks downplaying the urgent need to deal with the startling ‘extravagancies’ of AI bosses, and it often operates as a paralysing excuse for inaction. Having conceded that flesh-and-bone managers are far from perfect, it is essential to also acknowledge that contemporary legal systems ‘deploy and refine a wealth of experiences in confronting flaws in human decision making’.²³ Being accustomed to the idea of accountability, humans are inclined to shape their actions with a view to avoiding negative consequences. Moreover, human flexibility has been ‘recognised in socio-legal scholarship as vital in overcoming the inevitable imperfection associated with legal rules’.²⁴ This is not a straightforward matter for algorithms, given their strict execution-oriented nature and lack of volition.²⁵

At the workplace level, errors and disparities caused by human agents may have a limited impact, whereas technocratic artefacts can process myriad cases at a stroke, thereby cementing oppressive biases to the detriment of large populations of subjects.²⁶ Also, prejudices and flaws in human programmers can easily seep into code, reaching a new level of non-verifiability. Advocates of the unparalleled reliability of ADMS appear to fall victim to a fallacy, as they compare the not-yet-existent best potential of data-driven tools with the worst failures of ordinary decision-making. This ‘double standard’ biases an idealistic possibility against existing weaknesses, which people are possibly aware of because they have already been addressed and redressed in practice. While intended to increase standardisation and reduce the risk of errors,²⁷ algorithms can perpetuate and deepen prior patterns of discrimination and generate related harms, including feedback loops.²⁸ In addition, the presumed infallibility of data-driven applications deters managers from any divergence regarding decisions adopted by expensive applications.

2.2. Unpacking managerial prerogatives and exploring their limits

Readers may wonder whether the shift caused by algorithmic bosses is a genuine novelty. On closer inspection, large organisations generally rely on hierarchical settings that provide a wide latitude when it comes to governing the workplace. As a keystone of complex organisations,²⁹ managerial prerogatives have always been exercised

²² John Danaher, “The threat of algocracy: Reality, resistance and accommodation”, 29 *Philos Technol* 245-268 (2016).

²³ Karen Yeung, “Why worry about decision-making by machine?” in Karen Yeung and Martin Lodge (Eds.) *Algorithmic Regulation* (Oxford University Press, 2019), 21.

²⁴ *Ibid.*, 29.

²⁵ Johanna Jauernig, Matthias Uhl and Gari Walkowitz, “People prefer moral discretion to algorithms: Algorithm aversion beyond transparency”, 35 *Philos Technol* (2022).

²⁶ Safiya Umoja Noble, *Algorithms of Oppression* (New York University Press, 2018). See also Bernard E. Harcourt, *Against Prediction: Profiling, Policing and Punishing in the Actuarial Age* (University of Chicago Press, 2006).

²⁷ Ifeoma Ajunwa, “The paradox of automation as anti-bias intervention” 41 *Cardozo L. Rev.* 1671-1742 (2019).

²⁸ Sebastian Raisch and Sebastian Krakowski, “Artificial intelligence and management: The automation–augmentation paradox”, 46 *Acad Manage Rev* 192 (2021). See also Brishen Rogers, “The Law and Political Economy of Workplace Technological Change” 55 *Harv Civ Rights-Civil Lib Law Rev* 531-584 (2020).

²⁹ Richard C. Edwards, *Contested Terrain: The Transformation of the Workplace in the Twentieth Century* (Basic Books, 1982).

discretionally, resulting in stark power imbalances between contractual parties.³⁰ Yet, employment regulation seeks to play a dual and ambivalent role. It both legitimises the authority of one party and deploys a wide-ranging set of countervailing factors to temper the excesses of that authority in such a way as to avoid arbitrariness and irrationality.³¹

In a conventional relationship between management and labour, the class of supervisors is contractually assigned by the employing entity to govern the workforce by means of orders, appraisals and sanctions. Recently, due to the emergence of novel arrangements such as those typical of the gig-economy, courts have been asked to determine whether powers exercised through digital instruments amount to the notion of top-down authority as enshrined in EU and domestic law.³² Such an investigation of the evolving nature of ‘subordination’ has prompted tribunals to acknowledge that traditional hierarchical power can be exercised in different forms using digital tools and platforms.

Data-driven instruments magnify all classical managerial functions, thereby rendering the corresponding constraints less effective. For example, software is currently used throughout the entire ‘funnel’ of hiring processes, from the targeting of the job call to the preliminary screening, assessment and remote interviewing phases.³³ Identifying any systemic or human biases that have ‘sneaked into’ the code may prove arduous, for instance, because a job offer may never reach a candidate who has been excluded from the advertisement or because obtaining information about an entire cohort of applicants is rarely feasible. Working time can be constantly adjusted by scheduling applications such as Kronos, Onshift and Dayforce, which use data to predict customer preferences, business volumes and weather conditions. Due to this instantaneous and far-reaching picture of such fluctuations, workers’ shifts can be modified to minimise their idle time, which reduces the possibility of planning ahead with any degree of certainty, contrary to what is mandated by the Directive on transparent and predictable working conditions.³⁴

Tools enabled by AI and algorithms benefit from delayed bureaucratic hierarchies, with workers being encouraged to indicate their availability, track themselves and rate colleagues, even when professional activities are decoupled from the business premises (as in ‘work-from-home’ models). Monitoring the fine-grained aspects of work can determine a shift in the locus, temporal scope and comprehensiveness of surveillance,³⁵ as facilitated by the increasingly blurred boundaries between professional and personal

³⁰ Emmanuel Dockès, “Le pouvoir dans les rapports de travail”, in *Droit Social* (2004), 620. Philippa Collins and Joe Atkinson, “Labour rights, labour values and technology at work”, manuscript presented at the LLRN5 conference, June 2021.

³¹ Hugh Collins, “Discretionary powers in contracts”, in Campbell, Collins and Wightman (Eds.), *Implicit Dimensions of Contract: Discrete, Relational and Network Contracts* (Hart, 2003), 222-223.

³² Guy Davidov, “Subordination vs domination: Exploring the differences” 33 *Int J Comp Labour Law Ind Relat* 365 (2017).

³³ Miranda Bogen and Aaron Rieke, “Help wanted: An examination of hiring algorithms, equity, and bias”, (2018).

³⁴ Directive (EU) 2019/1152 of the European Parliament and of the Council of 20 June 2019 on transparent and predictable working conditions in the European Union.

³⁵ Ifeoma Ajunwa, Kate Crawford and Jason Schultz, “Limitless worker surveillance”, 105 *Calif L Rev* (2017), 735; Richard A. Bales and Katherine VW Stone, “The invisible web at work: Artificial intelligence and electronic surveillance in the workplace”, 41 *Berkeley J Employ Labor Law* 1-60 (2020).

lives. Thus, information on community habits, personal characteristics and family traits can be easily collected, frequently on a self-reported basis.³⁶ Moreover, algorithmic management offers potent new ways in which behaviours can be redesigned, enforcing a position of total subservience to the will (and whim) of superiors.

The employment relationship is a two-way organisational arrangement intended to reconcile the conflicting interests of contractual parties. As a position of domination in a relationship between private parties is only barely tolerable in liberal societies,³⁷ power must be kept within reasonable boundaries. To date, at the EU level, the employers' authority has been tempered by the setting of substantive and procedural rules in a panoply of legal domains, including labour law, anti-discrimination and data protection.

The key principles range from the need to provide justifications for company choices that affect workers to the importance of completing technical steps to allow for collective scrutiny and verifiability. Process-based law, which is also referred to as 'proceduralism', represents a shared institution spanning various legal disciplines across the EU.³⁸ At the national level, consultation and codetermination take place when employers introduce or alter monitoring technology in the workplace.³⁹ Privacy rules inform the legitimate capturing and processing of data while working time rules prevent employers from interfering in workers' lives. Stringent laws governing due process have to be followed in case of justified dismissal: the worker must be notified about the motives and offered an opportunity to appeal against the disciplinary decision by responding to the evidence offered in support of the dismissal.⁴⁰ Moreover, baseline employment legislation has been complemented by collectively negotiated rules intended to define involvement mechanisms for balancing this power asymmetry.⁴¹ This multipronged system of guardrails can 'cure, eradicate and curtail such imperfections in the labour market' by strengthening workers' position and curbing the decisional latitude vested in employers.⁴²

In summary, algorithmic management threatens to disrupt the current equilibrium between powers and their limits, as it allows the dodging of legal rules limiting the extent

³⁶ Catherine Tucker, "Privacy, algorithms, and artificial intelligence", in Ajay Agrawal, Joshua Gans and Avi Goldfarb (Eds.), *The Economics of Artificial Intelligence: An Agenda* (University of Chicago Press, 2018); Dawn Nafus and Gina Neff, *Self-Tracking* (MIT Press, 2016).

³⁷ Elizabeth Anderson, *Private Government: How Employers Rule Our Lives (and Why We Don't Talk about It)* (Princeton University Press, 2017).

³⁸ Guy Davidov, "Nonwaivability in labour law", 40 *Oxford J Leg Stud* 482 (2020).

³⁹ Antonio Aloisi and Elena Gramano, "Artificial intelligence is watching you at work. Digital surveillance, employee monitoring and regulatory issues in the EU context" 41 *Comp Labor Law Policy J* 95-121 (2019).

⁴⁰ Bernd Waas and Guus Heerma van Voss (Eds.), *Restatement of Labour Law in Europe, Vol III Dismissal Protection* (Hart Publishing, 2021); Valerio De Stefano, "'Master and servers': Collective Labour Rights and Private Government in the Contemporary World of Work" 4 *Int J Comp Labour Law Ind Relat* 425-444 (2020). See Art. 9(2)(a) of the ILO Termination of Employment Convention, 1982 (No. 158).

⁴¹ For instance, the EU directive on business restructuring imposes information and consultation duties on those who carry out business reorganisations. Directive 2009/38/EC on the establishment of a European Works Council or a procedure in Community-scale undertakings and Community-scale groups of undertakings for the purposes of informing and consulting employees (Recast). See Guy Mundlak, "Workplace-democracy: Reclaiming the effort to foster public and private isomorphism", 1 *Theor Inq Law* 159-198 (2014).

⁴² David Cabrelli and Rebecca Zahn, "Theories of domination and labour law: An alternative conception for intervention?", 3 *Int J Comp Labour Law Ind Relat* 339-364 (2017).

of managerial prerogatives.⁴³ Code-based systems add a new layer of complexity because they are more powerful and indecipherable than human power holders. Control can be perpetual rather than periodic. It may prove difficult to reconstruct or document procedural steps in an extensive way when power sources are fragmented across multiple actors. Parameters and decisions can evolve over time. Furthermore, the compelling system of penalties also fosters a model of preventive compliance, rendering the issuance of overt instructions less indispensable. Consequently, there is a concrete risk that ‘the range of normative values and goals pursued by employment law’ will be frustrated.⁴⁴

Commentators have advocated for employment standards to be updated to keep pace with the 21st-century workplace and the associated technologies.⁴⁵ However, workers are not defenceless, and the subsequent section focuses on the viability of existing remedies.

3 A CONVERGENCE À LA EUROPÉENNE: DEVISING AN INTEGRATED STRATEGY

In the EU context, the goal of avoiding the potentially nefarious consequences of ADMS in the workplace can be pursued by jointly reading several pieces of legislation that impose substantive and procedural rules intended to prevent employer powers from being disproportionate or detrimental. When work relationships are ‘wired’ into a web of data-driven applications, employment rights become inextricably intermingled with the (individual and collective) exercise of personal data protection and anti-discrimination rights.⁴⁶ The idea of integrating such schemes to address algorithmic management is not unprecedented. Indeed, several scholars have advocated for an ‘equal treatment by design’ model,⁴⁷ albeit not one tailored to employment matters. To date, these questions have mostly been mobilised in isolation. Such ironclad compartmentalisation is reflected in the filing and administration of lawsuits, which influences the fragmentation of expertise at the level of legal practice. Yet, algorithms exhibit a multipurpose nature and require a multidimensional approach. It is essential to avert the risk that ‘siloes’ regulations and remedies will end up fortifying loopholes in law enforcement.

Strategic litigation has partially revealed the responsibility of employers in terms of window-dressing internal operations under the veneer of seemingly inexplicable ‘black boxes’ that penalise certain groups of workers. To be clear, accentuating the relevance of

⁴³ Jeremias Adams-Prassl, “What if your boss was an algorithm? Economic incentives, legal challenges, and the rise of artificial intelligence at work”, 1 *Comp Labor Law Policy J* 123-146 (2019).

⁴⁴ Philippa Collins and Joe Atkinson (2021), n. 30.

⁴⁵ Annette Bernhardt, Lisa Kresge and Reem Suleiman, “Data and algorithms at work: The case for worker technology rights”, UC Berkeley Labor Center (2021).

⁴⁶ Cansu Safak and James Farrar, “Managed by bots. Data-driven exploitation in the gig economy,” *Worker Info Exchanges*, 2021, www.workerinfoexchange.org/wie-report-managed-by-bots.

⁴⁷ Ljupcho Grozdanovski (2021), n. 7; Philipp Hacker, “Teaching fairness to artificial intelligence: Existing and novel strategies against algorithmic discrimination under EU law”, 55 *CML Rev* 1143-1185 (2018); Raphaële Xenidis and Linda Senden, “EU non-discrimination law in the era of artificial intelligence: Mapping the challenges of algorithmic discrimination” in Ulf Bernitz, Xavier Groussot, Jaan Paju and Sybe A. de Vries (Eds.), *General Principles of EU Law and the EU Digital Order* (Kluwer Law International, 2020), 151-182; Frederik J. Zuiderveen Borgesius, “Strengthening legal protection against discrimination by algorithms and artificial intelligence”, 24 *Int J Hum Rights* 1572-1593 (2020).

revealing an algorithm's nucleus corresponds to a naïve reading of how systems normally work. In many cases, the code mutates after a decision has been made: a full reconstruction of the inner working is not a simple task. By contrast, the implied 'uncertainty principle' should prompt workers and litigants to rely on evidentiary instruments that leverage the lack of (shared) information to boost the claimant's attempts to overcome such 'fogginess'. This can be achieved by shifting the burden of proof to the employer,⁴⁸ establishing presumptions in favour of workers, conducting multi-stakeholder risk assessment and management exercises or providing judiciaries or administrative bodies with ample powers of discovery and access to evidence.⁴⁹

A multisource corpus of EU rules can be used to render ADMS accountable, explicable and questionable. Existing tools, as corroborated by the rulings and orders handed down by courts and authorities, can be used cumulatively to force the disclosure of the underlying logic behind algorithmic decision-making and promote workers' involvement.

3.1.Data protection law promoting legibility and accountability

The debate regarding the extent of safeguards related to information processed for HRM purposes is still unfolding years after the GDPR's entry into force in 2018.⁵⁰ Promisingly, the Regulation enumerates 'due-process-like protections'⁵¹ for data to be 'useful, intelligible, and actionable to the data subject'.⁵² However, inferential analytics—the ability to detect correlations and patterns within datasets and use them to categorise a subject as a group member—is believed to potentially escape the GDPR provisions, which are said to mostly be concerned with the collection phase, leaving certain aspects of processing unregulated.⁵³ The opacity of 'black boxes' is generally presented as an obstacle to the legibility of the mathematical formulas leading to final decisions, especially in the case of ML tools. This narrative underestimates or obfuscates the role of the programmers, providers or users who consciously decide to adopt such tools to pursue

⁴⁸ Giovanni Gaudio, "Algorithmic bosses can't lie! How to foster transparency and limit abuses of the new algorithmic managers", *Comp Labor Law Policy J* (Forthcoming).

⁴⁹ See, for instance, Art. 16(2) of the Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work, COM(2021) 762 final [hereinafter Platform Work Directive] ('national courts or competent authorities [shall be] able to order the digital labour platform to disclose any relevant evidence which lies in their control').

⁵⁰ Computing of categories of data 'revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership' and the processing of 'genetic data, biometric data [...], data concerning health or data concerning a natural person's sex life or sexual orientation' are prohibited under Art. 9(1) of the GDPR. However, this general limitation does not apply when such processing 'is necessary for the purposes of carrying out the obligations and exercising specific rights of the controller or of the data subject in the field of employment and social security and social protection law in so far as it is authorised by Union or Member State law or a collective agreement providing for appropriate safeguards'.

⁵¹ Gianclaudio Malgieri and Giovanni Comandé, "Why a right to legibility of automated decision-making exists in the general data protection regulation", 7 *Int Data Privacy L* 246 (2017). But see Sandra Wachter, Brent Mittelstadt and Luciano Floridi, "Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation" 7 *Int Data Privacy L* 76-99 (2017).

⁵² Andrew D. Selbst and Julia Powles, "Meaningful information and the right to explanation", 7 *Int Data Privacy L* 235 (2017).

⁵³ Sandra Wachter, Brent Mittelstadt and Chris Russell, "Counterfactual Explanations Without Opening the Black Box: Automated Decisions and the GDPR", 31 *Harv. J. L. & Tech.* 841-887 (2018).

goals that could be achieved by less intrusive means and who are responsible for introducing key commands in the form of code strings or validating the original datasets.⁵⁴

Algorithms aggregate multiple profiles and base real-time choices on composite metrics. Whimsical decision-making is often presented as uncharted territory due to the intricacy of divulging the chain of command (causality deficit) and the ‘cloudiness’ that prevents laypeople from understating relevant logic (impenetrability).⁵⁵ Moreover, workplace checks and balances are depicted as ‘ill equipped’ to deal with such issues.⁵⁶ An excessive emphasis on transparency, as a quasi-palliative measure,⁵⁷ risks being misplaced,⁵⁸ since such a remedy will be of limited practical use if collective mechanisms of redress lag. The same is true when a high level of expertise is required to make sense of information, which is not always disclosed in a readable form. Such intricacy impairs the protection of privacy rights for workers, deliberately flooded with barely usable paperwork.

To forestall any algorithmic abuses that jeopardise ‘informational self-determination’,⁵⁹ it is crucial to shift from an adjudicative adversarial approach to a model whereby risks are mitigated before appearing.⁶⁰ Obtaining information can be instrumental in two ways. On the one hand, it focuses on accountability duties by placing the onus on the employing entity to deploy processes that are not only efficient from an organisational perspective, but also reasonable and reportable. On the other, it confers rights that can be mobilised both to changing the decision and to laying the groundwork for a grievance based on equality law violations. These provisions corroborate the centrality of process-based law in the workplace, which is meant to democratise otherwise authoritarian decision-making.

This subsection aims to explore how data protection rights can form the basis for shaping more privacy-compliant policies that reduce the likelihood of algorithmic biases and privacy infringements. To do so, it follows a chronological order, defining an all-encompassing and step-by-step rulebook designed to ease the empowerment of workers and their representatives, thus delivering algorithmic accountability.⁶¹

First, a possibly underestimated resource in this context is the data protection impact assessment (DPIA) that must be drafted when data processing using new technologies ‘is

⁵⁴ Adrián Todolí-Signes, “Algorithms, artificial intelligence and automated decisions concerning workers and the risks of discrimination: the necessary collective governance of data protection” 4 *Eur Rev Lab & Res* 465-481 (2019).

⁵⁵ Andrew D. Selbst and Solon Barocas, “The intuitive appeal of explainable machines”, 87 *Fordham L Rev* 1092-1094 (2018).

⁵⁶ Jeffrey M. Hirsch, “Future work”, 3 *Univ Ill Law Rev* 889 (2020).

⁵⁷ Margot E. Kaminski, “The right to explanation, explained”, 34 *Berkeley Tech L J* 190-218 (2019). See also Mike Ananny and Kate Crawford, “Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability”, 3 *New Media Soc* 973-989 (2018).

⁵⁸ Lilian Edwards and Michael Veale, “Slave to the algorithm? Why a ‘right to an explanation’ is probably not the remedy you are looking for”, 16 *Duke L & Tech Rev* 18-84 (2017).

⁵⁹ Orla Lynskey, “Deconstructing data protection: The ‘added-value’ of a right to data protection in the EU legal order”, 3 *Int Comp Law Q* 569-597 (2014).

⁶⁰ Isabel Ebert, Isabelle Wildhaber and Jeremias Adams-Prassl, “Big data in the workplace: Privacy due diligence as a human rights-based approach to employee privacy protection”, *Big Data & Society* 1-14 (2021).

⁶¹ Compare with Recital 75 of the GDPR. See also Alessandro Mantelero, “AI and big data: A blueprint for a human rights, social and ethical impact assessment”, 4 *Comput Law Secur Rev* 754-772 (2018).

likely to result in a high risk to the rights and freedom of natural persons’ (Art. 35(1) of the GDPR). Algorithmic discrimination falls neatly within this risk-centred definition. The DPIA should not be a one-off exercise, and it must be conducted prior to the implementation of AI tools and updated in an iterative manner throughout their deployment. Art. 35(3)(a) of the GDPR requires a DPIA in case of ‘a systematic and extensive evaluation of personal aspects relating to natural persons which is based on *automated processing, including profiling*, and on which decisions are based that produce legal effects concerning the natural person or similarly significantly affect the natural person’ (emphasis added). Moreover, according to Art. 35(7), the assessment must include a systematic description of the operations and the purposes of the processing, the clarification of necessity and proportionality, the risks faced by the data subjects and the measures taken to address those risks and demonstrate compliance with the GDPR.⁶²

By encouraging dynamic risk assessment and alleviation, reporting and monitoring, the DPIA is intended to ‘shift the focus from *ex post* correction to *ex ante* rules seeking to prevent unfair data processing at the outset’,⁶³ thereby offering collective governance tools and a meaningfully protective shield for individual rights. Far from being a box-ticking exercise, the DPIA should prompt the redesign of internal practices to ensure full conformity with the law and, at the same time, lay the foundations for the exercise of individual due process rights. Indeed, the DPIA ‘plays a crucial role in connecting internal company heuristics and risk mitigation to outward-facing rights, and in forming the substance of several different kinds of explanations’.⁶⁴ Significantly, the systematic description of ADMS could be disclosed to workers in a plain and accessible form thanks to the DPIA. Aside from contributing to the prevention of unfairness, inaccuracy and discrimination, this ‘vigilance’ instrument can serve to establish the substance for successive remedial mechanisms triggered by allegedly wronged workers.⁶⁵

The DPIA procedure also presupposes an employer’s ability to demonstrate that personal data processing is informed by all the principles laid down in Art. 5(1) of the GDPR (lawfulness, fairness and transparency, purpose limitation, data minimisation, accuracy, storage limitation, integrity and confidentiality) and that the employees have received appropriate information regarding the methods and purposes of the processing. Such ‘data

⁶² Drafting the document satisfies the controller’s duty to implement, review and update ‘appropriate technical and organisational measures to ensure and to be able to demonstrate’ that the processing is compliant with the Regulation (Art. 24(1) of the GDPR). ADMS, profiling based on ‘aspects concerning the data subject’s performance at work’, systematic monitoring and processing involving vulnerable data subjects all fall within the definition of high risk. See Art. 29 WP, Guidelines on Data Protection Impact Assessment (DPIA) (wp248rev.01) (using the example of ‘[a] company systematically monitoring its employees’ activities, including [...] employees’ work station, internet activity, etc.’ as a case in which the DPIA is specifically required). The Art. 29 WP is an ancestor of the European Data Protection Board (EDPB), the EU regulators tasked with enforcing the GDPR.

⁶³ Philipp Hacker (2018), n. 47.

⁶⁴ Margot E. Kaminski and Gianclaudio Malgieri, “Algorithmic impact assessments under the GDPR: Producing multi-layered explanations”, 11 *Int Data Privacy L* 132 (2020).

⁶⁵ See also Art. 7, Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work, COM(2021) 762 final (introducing a *sui generis* algorithmic impact assessment of the risks of automated monitoring and decision-making systems to the safety and health of platform workers).

protection via design obligations⁶⁶ are expected to shape a standard of good conduct that ‘proceduralises’ data controllers’ powers, as is the case in many employment-related matters. This information can prove key to bringing a *prima facie* discrimination case,⁶⁷ deterring the employing entity from relying on software provided by third parties without first ensuring an appropriate technical understanding of its implications. This requirement can be turned into a participatory phase by including workers’ representatives and Data Protection Authorities (DPAs) (Art. 36 of the GDPR).⁶⁸ In short, the DPIA reinforces the focus on risk avoidance and ensures more collegial data processing in the workplace.

Second, art. 13(2)(f) and 14(2)(g) impose an obligation to notify data subjects that they are involved in ‘automated decision-making, including profiling, referred to in Art. 22(1) and (4)’. In addition, ‘meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject’, must be provided when personal data are collected from the data subject or from a third party, respectively. As explained in Recital 60, the goal is ‘to ensure fair and transparent processing taking into account the specific circumstances and context’. Art. 15(1) uses the same wording to flesh out the individual right to access, whereby the data controller is required to share meaningful information about the logic, significance and consequences of the data processing. Subsection (h) of the same article explicitly mentions the need to obtain information regarding ‘the existence of automated decision-making, including profiling, referred to in Art. 22(1) and (4) and, at least in those cases, meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject’. These provisions offer a reliable channel for examining the lawfulness of processing or triggering legal remedies.

Admittedly, notification and access rights risk being confined to statutes on the books when information is unevenly distributed. Still, a carefully drafted DPIA can address such limitations by allowing workers to learn more about the ‘logic’, namely the rationale behind the formula based on certain features and weights, and the effects of the processing. The safeguards grow proportionally with the extent of the risks and the requesters’ expertise. According to the Article 29 Working Party (Art. 29 WP),⁶⁹ albeit not indispensable, ‘a complex mathematical explanation about how algorithms or

⁶⁶ Pieter Van Cleynenbreugel, “EU by-design regulation in the algorithmic society,” in Hans-W. Micklitz, Oreste Pollicino, Amnon Reichman, Andrea Simoncini, Giovanni Sartor and Giovanni De Gregorio (Eds.), *Constitutional Challenges in the Algorithmic Society* (Cambridge University Press, 2021), 204.

⁶⁷ Elise Muir, *EU Equality Law: The First Fundamental Rights Policy of the EU* (Oxford University Press, 2018), 161.

⁶⁸ ‘The controller must “seek the views of data subjects or their representatives” (Art. 35(9)) where appropriate’. The WP29 considers that ‘those views could be sought through a variety of means, depending on the context (e.g. a generic study related to the purpose and means of the processing operation, a question to the staff representatives, or usual surveys sent to the data controller’s future customers) [...]; if the data controller’s final decision differs from the views of the data subjects, its reasons for going ahead or not should be documented’. Article 29 WP, Opinion 2/2017 on data processing at work.

⁶⁹ Article 29 WP, Guidelines on Automated individual decision-making and Profiling 2016/679 (wp251rev.01).

machine-learning work’ should also be provided if it is necessary to allow experts to further confirm how the decision-making process runs.⁷⁰

Third, all these provisions must be read in conjunction with Art. 22, which is considered one of the most promising aspects of the GDPR.⁷¹ Regrettably, what has been interpreted—perhaps overly optimistically—as an outright ban on ADMS does not apply when this type of processing is presented as ‘necessary for entering into, or performance of, a contract between the data subject and a data controller’, which could be the case in relation to employment-related applications of automated decisions, and when it is based on the data subject’s explicit consent. The Art. 29 WP has specified that consent cannot serve as a legal basis in the context of employment, given the inherently unbalanced position of the workers who would bear the consequences of refusals. Yet, the first ‘necessity’ exception is likely to limit the application of the provision at the workplace level. Section 3 comes to the rescue here, providing that ‘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 human intervention on the part of the controller, to express his or her point of view and to contest the decision’. This list of due process safeguards, which implements the deep-seated principle of providing an opportunity to be heard to the addressee of any decision, is not exhaustive.⁷²

In spring 2021, when dealing with cases of platform drivers allegedly ‘robofired’ by an algorithm, an Amsterdam court agreed that the workers had been denied access to meaningful information concerning the individual ratings fuelling the algorithms (Art. 15 of the GDPR).⁷³ In two instances, however, an account suspension and a matchmaking feature were not considered to have ‘significantly’ affected those workers under Art. 22 of the GDPR, which partially contrasts with the opinion of the Art. 29 WP.⁷⁴ In a similar case, one applicant succeeded in establishing the adoption of an automated system for calculating wage deductions and in enforcing the right to know the main assessment and specific weight criteria used in the model. Two major transport companies, Uber and Ola, were ordered to reveal information about the decisions made, the data analysed and the assumptions justifying the final choice, which allowed platform workers to verify the correctness and lawfulness of the data processing. While not major victories, and despite the failed attempt by Uber to claim that data access requests coordinated by a union represented an abuse of rights, such union-led litigation offered a glimpse into the strengths and limitations of the GDPR when mobilised against algorithmic abuses.

⁷⁰ Michael Veale and Lilian Edwards, “Clarity, surprises, and further questions in the Article 29 WP draft guidance on automated decision-making and profiling”, 34 *Comput Law Secur Rev* 398-404 (2018).

⁷¹ Lee A. Bygrave, “Minding the Machine v2.0. The EU General Data Protection Regulation and Automated Decision-Making” in Karen Yeung and Martin Lodge (Eds.) *Algorithmic Regulation* (Oxford University Press, 2019).

⁷² Andrew D. Selbst and Julia Powles (2017), n. 52.

⁷³ The cases starkly reveal the huge potential of the GDPR as well as the ambiguity of some relatively new formulas, such as ‘solely automated processing’ or ‘effects that are legally similar to legal ones’. Sebastião Barros Vale and Gabriela Zanfir-Fortuna, *Automated Decision-Making Under the GDPR: Practical Cases from Courts and Data Protection Authorities*, Future of Privacy Forum, 2022, <https://bit.ly/3FUGXRg>.

⁷⁴ Article 29 WP, Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679, 22.

Opinions as to the existence of a right to explanation in the GDPR are polarised.⁷⁵ Much has been written about the imperfect match between Art. 22 and Recital 71, which defines a conspicuous model ([...] suitable safeguards, which should include specific information to the data subject and the right to obtain human intervention, to express his or her point of view, to *obtain an explanation of the decision reached after such assessment* and to challenge the decision’ [emphasis added]). For the sake of brevity, this subsection does not engage with the stimulating discussion concerning the reading of some sections of the GDPR and instead supports a purposive interpretation of the Recital. While it is well known that recitals are not legally binding, they can ‘cast light on the interpretation to be given to a legal rule’.⁷⁶ More importantly, the Art. 29 WP has stated that the data controller is required to find simple ways to inform the data subject about the rationale or the criteria behind a decision.⁷⁷ The Guidelines pragmatically confirm that it is not necessary to disclose the full algorithm, which is often protected by trade secrecy or to offer deeply technical explanations. What is necessary is the sharing of meaningful information about its logic (including the factors and their respective weights) so as to allow the worker to understand and possibly challenge the decisions.⁷⁸

Besides encouraging preventive and protective measures on ADMS, the proposed Directive on platform work provides for the right to obtain an explanation for any decision made or merely supported (as opposed to fully carried out) by ADMS that significantly affect the platform worker’s working conditions’ (Art. 8).⁷⁹ Moreover, by adopting an instrumentalist approach, the AI Act⁸⁰—currently under discussion for approval—states that high-risk systems within the workplace must be ‘sufficiently transparent to enable users to interpret the system’s output and use it appropriately’ (Art. 13). The proposed Regulation focuses on the use of AI systems ‘for recruitment or selection of persons’ and for ‘making decisions on promotion and termination and for task allocation, monitoring or evaluation of persons in work-related contractual relationships’ (Recital 36). While acknowledging that these ‘high-risk’ AI practices pose significant risks to the health and

⁷⁵ For an overview, see Bryan Casey, Ashkan Farhangi and Roland Vogl, “Rethinking explainable machines: The GDPR’s ‘right to explanation’ debate and the rise of algorithmic audits in enterprise”, 34 *Berkeley Tech L J* 145 (2019); Bryce Goodman and Seth Flaxman, “European Union regulations on algorithmic decision-making and ‘a right to explanation’”, 38 *AI MAG* 55-56 (2017).

⁷⁶ Case 215/88 *Casa Fleischhandels-GmbH v Bundesanstalt für landwirtschaftliche Marktordnung* 13 July 1989 ECLI:EU:C:1989:331. See Tadas Klimas and Jurate Vaiciukaite, “The law of recitals in European Community legislation,” 15 *ILSA J Int & Comp L* 61 (2008).

⁷⁷ Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679, 25.

⁷⁸ Emre Bayamlioglu, “The right to contest automated decisions under the General Data Protection Regulation: Beyond the so-called ‘right to explanation’”, *Regul Gov* (2021). For a critical perspective, see Sandra Wachter, Brent Mittelstadt and Chris Russell, “Why fairness cannot be automated: Bridging the gap between EU non-discrimination law and AI” 41 *Comput Law Secur Rev* 1-30 (2021).

⁷⁹ This provision must be read in conjunction with Art. 14, which mandates ‘human oversight’ to prevent or minimise ‘the risks to health, safety or fundamental rights that may emerge when a high-risk AI system is used in accordance with its intended purpose or under conditions of reasonably foreseeable misuse [...]’. See also Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services (on transparency regarding ranking and complaint-handling mechanisms).

⁸⁰ Proposal For a Regulation of The European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) COM/2021/206 Final.

safety or fundamental rights of persons, it merely requires such systems to comply with self-certification through *ex-ante* conformity assessment procedures. While it is too early to say if the final version will address the concerns raised by several commentators,⁸¹ it cannot be overlooked that the AI Act may have de-regulatory effects on the current sectoral and national legislation, which sets a high standard of protection.⁸² Should the two legal instruments be approved in their current form, EU law would end up affording new protection to persons performing platform work while deteriorating (domestic) protective standards against the same types of management for all other workers.⁸³

In summary, the GDPR provisions afford meaningful protection against power augmentation because they regiment the process by which data can be collected, limit the subtlest forms of automated decision-making and render business practices open and objectionable.⁸⁴ Rules concerning information, disclosure and explanation of the logic underlying algorithms are especially noteworthy if read as a procedural *primum* for shaping bias-free workplace policies and eradicating discrimination. As a global benchmark, the GDPR is finally revealing its forward-looking nature. In this respect, the ‘interventionist’ role of DPAs is crucial, as they have the resources and skills necessary to enforce compliance with data protection regulations.⁸⁵ They have been increasingly cooperating across EU countries to enforce information, access and explanation rights.

3.2. Equality law addressing data-driven discrimination

By operating at the level of effects, non-discrimination law promises to capture new forms of biases hardwired into algorithms and to provide useful remedies for removing their disparate impacts.⁸⁶ This allows workers to bypass the need to dissect an algorithm’s heart: presenting the facts that imply a lack of compliance with equal treatment rules has occurred or is likely to occur would be sufficient to trigger evidentiary simplifications that benefit the victim. Hence, legal inferences can be used in court to defeat inferential analytics. Such rules may also operate as adequate and dissuasive sanctions, forcing the readaptation of company policies. For example, in 2020, an Italian court found a

⁸¹ Aislinn Kelly-Lyth, “European Union, the AI Act and algorithmic management”, *Comp Labour Law Policy J, Dispatch* (2021).

⁸² Michael Veale and Frederik Zuiderveen Borgesius, “Demystifying the draft EU Artificial Intelligence Act—Analysing the good, the bad, and the unclear elements of the proposed approach”, *22 Comput Law Rev Int* 97-112 (2021). More worryingly, being centred on market liberalisation goals, the AI Act may deem such heterogeneous models incompatible with internal market functioning. Its legal basis (Art. 114 of the Treaty on the Functioning of the European Union [TFEU]) could be used to trump existing national regulations. See Miriam Kullmann and Aude Cefaliello, “The draft Artificial Intelligence Act (AI Act): Offering false security to undermine fundamental workers’ rights”, (2021), <https://ssrn.com/abstract=3993100>.

⁸³ Valerio De Stefano and Mathias Wouters, “AI and digital tools in workplace management evaluation: An assessment of the EU’s legal framework” (Brussels: Scientific Foresight Unit, European Parliamentary Research Services, 2022).

⁸⁴ Giovanni Sartor and Francesca Lagioia, “The impact of the General Data Protection Regulation (GDPR) on artificial intelligence” Directorate-General for Parliamentary Research Services of the Secretariat of the European Parliament. Brussels: European Union (2020).

⁸⁵ András Jóri, “Shaping vs applying data protection law: Two core functions of data protection authorities”, *5 Int Data Privacy L* 133 (2015).

⁸⁶ Evelyn Ellis and Philippa Watson, *EU Anti-Discrimination Law* (Oxford University Press, 2012).

scheduling algorithm to have discriminatory impacts on food-delivery riders by treating them all the same, regardless of the reasons for their absence, thereby disadvantaging those who were on strike or sick, had a disability, or assisted a disabled person or a sick minor. The uniform application of a sanctioning model had a disparate effect on workers who were exercising constitutionally sanctioned rights. These workers were marginalised when it came to accessing better-paid jobs, ‘significantly reducing [their] future work opportunities’.⁸⁷ Before the order had been issued, the platform changed the algorithm.

Some constitutive elements of algorithmic tools, however, threaten the full application of the existing framework. The level of granularity reached due to ML can provide managers with an opportunity to differentiate treatments in a tailor-made manner, attributing competitive entitlements such as shifts, instructions, promotions, pay raises, disciplinary measures and even employment terminations to workers on the basis of information not normally available in traditional workplaces. In short, unintuitive, subtle and intangible classifications can open up new avenues for ‘invisible’ forms of discrimination.⁸⁸

Moreover, metrics are designed to be evolvable, while software can be commanded to juggle an infinite number of factors. This is arguably one of the most controversial issues concerning big data analytics: classes are assembled based on characteristics that are not plainly considered protected grounds or easily associated with such grounds (thinks of facial expressions, tone of voice, use of specific words, sentence length and talking speed during recruitment procedures). In addition, consider the possibility of penalising job applicants after inferring based on an outdated browser that they are connecting from a public library in a given neighbourhood, an element associated with a certain educational background.⁸⁹ While patterns and correlations may be as effective as direct identifiers, these grounds (IP address, location, education) are not included in EU equality law (only ethnic origin is).⁹⁰ Also, workers may be disadvantaged after being mischaracterised as belonging to a group, making judicial redress even more complicated for those affected.

Reviewing the rights set out in the EU’s non-discrimination directives is far beyond the scope of this paper. Interestingly, the fairly composite model covers the entire cycle of managerial functions.⁹¹ To this must be added the Art. 21 of the Charter of Fundamental

⁸⁷ Tribunal of Bologna, Order no. 2949/2019, 31 December 2020, 19. See Vincenzo Pietrogiovanni, “Deliveroo and Riders’ Strikes: Discriminations in the Age of Algorithms”, 7 *Intern Labor Rights CL* 317-321 (2021).

⁸⁸ Raphaële Xenidis, “Tuning EU equality law to algorithmic discrimination: Three pathways to resilience,” 27 *Maast J Eur & Comp L* 736-758 (2020).

⁸⁹ Aislinn Kelly-Lyth, “Challenging biased hiring algorithms”, 41 *Oxf J Leg Stud* 899-928 (2020).

⁹⁰ As in the ‘infamous’ example of the Amazon hiring algorithm that taught itself to discriminate against female candidates, ML applications may elaborate multiple variables or detect patterns in large datasets, thereby ‘elevating’ a discernible protected trait in decision making. See Miriam Kullmann, “Platform work, algorithmic decision-making, and EU gender equality law” 34 *Int J Comp Labour Law Ind Relat* 1-21 (2018).

⁹¹ Directive 2000/78/EC tackles discrimination on the grounds of religion, belief, disability, age or sexual orientation only in relation to employment matters. Directive 2000/43/EC implements the principle of equal treatment irrespective of racial or ethnic origin in employment matters and beyond. Directive 2004/113/EC concerns equal treatment between men and women in terms of access to and supply of goods and services and, therefore, deals with gender equality in the consumption market, whereas Directive 2006/54/EC addresses gender discrimination in matters of employment and occupation, as complemented by Directive

Rights of the EU, which prohibits discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or other opinion, membership of a national minority, property, birth, disability, age or sexual orientation.⁹² Given the use of the predeterminer ‘such as’, this could be construed as an open and non-exhaustive list of protected factors. Such a reading would widen the range of grounds upon which to anchor the fight against algorithmic discrimination.⁹³

To clarify terminology, direct discrimination occurs when ‘one person is treated *less favourably* than another is, has been, or would be treated in a comparable situation on any of the protected grounds’.⁹⁴ On the other hand, indirect discrimination is defined as ‘an apparently neutral provision, criterion or practice [that] would put [persons with a membership of a protected category] *at a particular disadvantage* compared with other persons, unless that provision, criterion or practice is justified by a legitimate aim and the means of achieving that aim are appropriate and necessary’ (emphasis added).⁹⁵

From a litigation perspective, to successfully demonstrate discrimination, the plaintiff must prove a twofold nexus of causality between the conduct and the harm suffered as well as between the action and the protected ground. Direct discrimination cannot be justified, which puts the defendant in an inconvenient position. However, claimants could be required to ‘isolate’ a single protected ground (or a proxy thereof) to make their case, a complex issue aggravated by the need to find a comparator that meets the relevant definition, which ‘has proved to be the Achilles heel of EU equality law’.⁹⁶ While it would be odd for programmers to ‘codify’ less favourable treatment based on the possession of a protected characteristic, software typically undergoes a validation stage that allows analysts to assess the model’s operation in practice, predict the likelihood of errors and determine their relevance to the model’s performance.⁹⁷ Thus, when a variable emerges

2010/41/EU regarding equal treatment between men and women engaged in an activity in a self-employed capacity. Bell, *Anti-Discrimination Law and the EU* (Oxford University Press, 2002). Strikingly, gender equality and sex discrimination are not mentioned in Recital 71 of the GDPR (‘racial or ethnic origin, political opinion, religion or beliefs, trade union membership, genetic or health status or sexual orientation’), which misaligns the two groups of protected factors. Similarly, the broad notion of sensitive data set out in Art. 9(1) of the GDPR (‘racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, [...] genetic data, biometric data, data concerning health or data concerning a natural person’s sex life or sexual orientation’) does not overlap with the list included in Art. 19 TFEU, failing to explicitly mention sex, disability and age. See also Article 22(4) of the GDPR, according to which decision based solely on automated processing, including profiling, shall not be based on special categories of personal data.

⁹² See also Art. 2 and 3 of the TEU; Art. 8, 10, 19 153 and 157 of the TFEU. See also Art. 21 and 23 of the EU Charter of Fundamental Rights.

⁹³ Nevertheless, the Court of Justice of the EU (CJEU) seems reluctant to depart from a closed catalogue and so is likely to stick to the factors mentioned in secondary law. C-354/13 *Fag og Arbejde (FOA) v Kommunernes Landsforening (KL)* 18 December 2014 EU:C:2014:2463; C-13/05 *Sonia Chacon Navas v Eures Colectividades SA* 11 July 2006 EU:C:2006:456.

⁹⁴ Art. 2(1)(a) Recast Gender Equality Directive. See also Art. 2(2)(a) of Directive 2000/43/EC, Art. 2(2)(a) of Directive 2000/78 and Art. 3(a) of Directive 2010/41.

⁹⁵ Art. 2(1)(b) of Directive 2006/54, Art. 2(2)(b) of Directive 200/43, Art. 2(2)(b) of Directive 2000/78 and Art. 3(b) of Directive 2010/41.

⁹⁶ Nicola Countouris, “EU law and the regulation of ‘atypical’ work”, in Alan Bogg, Cathryn Costello and A.C.L. Davies (Eds.), *Research Handbook on EU Labour Law* (Edward Elgar Publishing, 2016), 246.

⁹⁷ Betsy Anne Williams, Catherine F. Brooks and Yotam Shmargad, “How algorithms discriminate based on data they lack: Challenges, solutions, and policy implications”, 8 *J Inf Policy* 78-115 (2018).

as explaining a disparate impact despite the source code being ‘blind’ to protected grounds, it does not limit the application of non-discrimination rules.⁹⁸

Indirect discrimination is highly suited to challenging algorithmic biases, as it is inherently concerned with the disadvantaging impact of a *de facto* ‘standardised’ decision, measure or policy, rather than with the mere membership of a community identified by the presence of shared protected ground. Those who claim algorithms to reduce arbitrariness rely on the argument that they ‘answer to no one’, which is precisely the rationale behind indirect discrimination. In many cases, treating similar situations differently represents a way to pursue substantive equality. Contrariwise, ‘sartorial neutrality’ may disproportionately affect members of vulnerable groups.⁹⁹ In addition, as algorithms are incredibly good at discriminating on the basis of socio-economic status, educational background, health status and income, relying on the notion of indirect discrimination by proxy can offer efficient solutions.¹⁰⁰ Yet, on the negative side, a broader set of justifications apply to this form of discrimination. Stark tension could arise between predictive accuracy sold as a legitimate business requirement and social justice paradigms. However, this does not mean that judges cannot be persuaded that there was a less discriminatory practice that was deliberately not adopted by the employer.

Both forms of discrimination present advantages and disadvantages when considering disparate algorithmic treatment.¹⁰¹ A common opportunity lies in the fact that the notion of intent is irrelevant to both types, while a shared shortcoming is associated with difficulties in ‘identifying differential treatment on the basis of protected grounds, especially when they are abstracted, or intersectional, or emergent’.¹⁰² Workers are seldom in a position to feel or realise that they have been included in a ‘risky’ group at the systemic level because data-driven matching processes are fed with innumerable variables.¹⁰³ This is aggravated by a traditionally narrow interpretation of protected grounds. Discrimination by perception, ascription or assumption does not find neat and explicit protection in EU law, despite being the most common way in which ML works.¹⁰⁴

Equality law has afforded new methods of overcoming this flaw in an evolutionary way, with case law serving as an engine of development. Several rulings have extended the notion of direct discrimination to cases in which a person is treated unfavourably because

⁹⁸ Marzia Barbera, “Discriminazioni algoritmiche e forme di discriminazione”, 7 *Labour Law Issues* 1-17 (2021). See also Jeremias Adams-Prassl, Reuben Binns and Aislinn Kelly-Lyth, “Directly Discriminatory Algorithms”, *The Modern Law Review* (2022).

⁹⁹ Marc De Vos, “The European Court of Justice and the march towards substantive equality in European Union anti-discrimination law”, 20 *Int J Discrim Law* 62-87 (2020).

¹⁰⁰ Case C-457/17 *Heiko Jonny Maniero v Studienstiftung des deutschen Volkes eV* 15 November 2018 EU:C:2018:912. See also Anya E.R. Prince and Daniel Schwarcz, “Proxy discrimination in the age of artificial intelligence and big data”, 105 *Iowa Law Rev* 1263 (2020).

¹⁰¹ Raphaële Xenidis and Linda Senden (2020), n. 47.

¹⁰² Monique Mann and Tobias Matzner, “Challenging algorithmic profiling: The limits of data protection and anti-discrimination in responding to emergent discrimination”, 6 *Big Data & Society* (2019).

¹⁰³ Matthias Leese, “The new profiling: Algorithms, black boxes, and the failure of anti-discriminatory safeguards in the European Union,” 45 *Secur Dialogue* 494-511 (2014).

¹⁰⁴ Janneke Gerards and Raphaële Xenidis, *Algorithmic Discrimination in Europe: Challenges and Opportunities for Gender Equality and Non-Discrimination Law* (Publications Office of the European Union, 2021).

they are associated with a protected characteristic that they do not possess themselves (in *Coleman*, discrimination by association was recognised in favour of a mother based on her child's disability).¹⁰⁵ Moreover, the concept has already been extended to include cases in which 'decisions are made on the basis of characteristics related to, but different from, protected grounds', such as the *CHEZ* ruling using residency as a proxy for ethnicity in a rather expansive manner. More specifically, in a claim brought by a non-member of the Roma group, residents of an urban district where many Roma people lived were found to have been discriminated against through technical impediments due to their electricity consumption meters being located at an unusual height.¹⁰⁶ *Coleman* and *CHEZ* demonstrate that, far from being static, EU non-discrimination law can apply beyond the range of those individuals possessing particular protected characteristics.

The CJEU is inclined to interpret the idea of a protected characteristic flexibly and purposively, in such a way as to cover individuals who do not necessarily belong to the group of persons sharing such an element in an immutable fashion. By leveraging this evolutionary and judge-made notion, (direct) discrimination by association and proxy can address algorithms programmed or trained to use behavioural data that present functional affinity with protected grounds for classification and decision-making purposes.

According to the same reasoning, when the validation phase fails to include anticipatory safeguards capable of preventing disparities arising from protected factors (including by means of neutral policies), non-discrimination law should apply. Indeed, conscious 'blindness' to a protected characteristic does not insulate the employer when such deliberate preference can result in discrimination against a certain group, as demonstrated by the Italian case discussed above. This is also true for the vast bulk of data processing systems for hiring and promotion that elaborate information, such as average working hours, educational background, career consistency and retention prospects, that are to some extent associable with protected grounds. This approach will be crucial, especially when it comes to countering indicators used to 'screen out a disfavoured group'.¹⁰⁷ Predictive accuracy should not be used as a justification in such a case, as it would barely pass the tests of necessity and appropriateness. In fact, given the obligation to assess the dataset for minimising risks, the inclusion of factors indirectly associated with protected grounds works against managers' interests and could be successfully used in court.

A further aspect that deserves attention concerns the lack of accessibility to data that has long plagued the application of equality law provisions in the field of employment. In this respect, the algorithmic 'parallel universe' does not differ significantly from the analogue

¹⁰⁵ Case C-303/06 *S. Coleman v Attridge Law and Steve Law* 17 July 2008 ECLI:EU:C:2008:415.

¹⁰⁶ Case C-83/14 '*CHEZ Razpredelenie Bulgaria*' *AD v Komisia za zashtita ot diskriminatsia* 16 July 2015 ECLI:EU:C:2015:480. A prominent example is discriminatory treatment based on pregnancy, which is classified as sex discrimination because pregnancy is considered a proxy for 'being a woman'. C-177/88 *Elisabeth Johanna Pacifica Dekker v Stichting Vormingscentrum voor Jong Volwassenen (VJV-Centrum) Plus* 8 November 1990 EU:C:1990:383. See Marc De Vos, "Substantive formal equality in EU non-discrimination law", in Thomas Giegerich (Ed.) *The European Union as Protector and Promoter of Equality* (Springer, 2020), 250.

¹⁰⁷ Pauline Kim and Matthew T. Bodie, "Artificial intelligence and the challenges of workplace discrimination and privacy", *ABA Journal of Labor and Employment Law* 289 (2021).

world. Proving discrimination has always been a difficult task. Yet, several limitations of the current understanding and application could be overcome by mastering data protection rights. In this circular process, access to information granted by the GDPR can be used to establish a *prima facie* case of discrimination, which would also contribute to removing the current ‘stumbling blocks’,¹⁰⁸ paving the way for strategic litigation to benefit those most vulnerable to ADMS. DPAs could offset the enforcement deficit by facilitating access to documents and materials that are not publicly available.

The post-2000 directives in the field of anti-discrimination include special evidentiary rules whereby the burden of proof is partially reversed or shared between the claimant and the respondent (in this context, the employer).¹⁰⁹ This evidential discharge represents an exception to the general principle by which ‘each party bears the burden of proving the facts it alleges and from which it derives favourable legal consequences’.¹¹⁰ Those persons who consider themselves ‘wronged because the principle of equal treatment has not been applied to them’¹¹¹ need only establish in court plausible yet not conclusive facts from which it can be presumed that direct or indirect discrimination has occurred. Notably, this requirement can be fulfilled by showing that the employer did not comply with the duty of care or engaged in negligent conduct. It is incumbent on the alleged perpetrator to demonstrate that the principle of equal treatment was not breached by disproving the double causal link between the harm, the conduct and the protected characteristic, or by presenting a valid justification that passes the relevant tests of appropriateness and necessity, in case of indirect discrimination allegations.

A successful strategy can be deployed by establishing a *prima facie* case of discrimination that points to an algorithmic tool as the source of biases and then rebutting claims that the differential treatment cannot be exclusively and compellingly justified by the presence of a protected characteristic.¹¹² This can also be achieved using statistical or testimonial (circumstantial) evidence. For instance, the numerical over-representation of women among those taking parental leave can be used to trigger a presumption of discrimination when less favourable treatment is adopted in relation to someone who requests time off.¹¹³

Reversing the burden of proof only partially mitigates the obstacles faced by plaintiffs. Despite this streamlined model, gathering evidence can prove arduous for victims and, in some cases, monitoring entities due to the lack of transparency. However, as providing

¹⁰⁸ Philippa Collins, “Automated dismissal decisions, data protection and the law of unfair dismissal”, *UK Labour Law Blog*, 19 October 2021, bit.ly/3oaNfnu.

¹⁰⁹ Julie Ringelheim, “The burden of proof in antidiscrimination proceedings. A focus on Belgium, France and Ireland”, 2 *Eur Equal Law Rev* (2019).

¹¹⁰ Lilla Farkas and Oragh O’Farrell, *Reversing the Burden of Proof: Practical Dilemmas at the European and National Level* (Publications Office of the European Union, 2015).

¹¹¹ In the Racial Equality and Employment Equality Directives adopted in 2000, as well as in the 2004 Gender Equality in Access to Goods and Services Directive and the 2006 Recast Gender Directive.

¹¹² See Sandra Fredman, “Pasts and futures: EU equality law”, in Alan Bogg, Cathryn Costello and A.C.L. Davies (Eds.), *Research Handbook of European Labour Law* (Edward Elgar Publishing, 2016), 391-421.

¹¹³ Raphaële Xenidis and Linda Senden (2020), n. 47 (indicating ‘average working hours’ as a potentially discriminatory proxy used against female applicants in case of promotion also when past successful candidates’ data has been made blind to applicants’ gender). See also C-170/84 *Bilka-Kaufhaus GmbH v Weber von Hartz* 13 May 1986 ECLI:EU:C:1986:204.

prima facie evidence of discrimination could be enough, there is no need to open up the ‘black box’ to prove algorithmic discrimination in court. Workers can exercise their access rights to collect information not included in the DPIA to make a solid case. Commentators warn that data controllers may be uncooperative and take advantage of inherent information asymmetries, being aware that courts are not prone to forcing them to share corporate information or confidential data. Yet, such a form of resistance is not bulletproof. In *Meister*—a case dealing with the rejection during the recruitment process of a candidate who met the criteria for the post—the CJEU confirmed that there is no specific requirement to share data with the presumed victim. Promisingly, the CJEU added that ‘refusal to grant any access to information [to the applicant meeting the requirements of the job advertisement] may be one of the factors to take into account in the context of establishing facts from which it may be presumed that there has been direct or indirect discrimination’.¹¹⁴ Consequently, hesitancy or reluctance to fulfil the duty under Art. 15 of the GDPR or, more broadly, a restrictive position may be used in court as circumstantial evidence supporting a *prima facie* case of discrimination.¹¹⁵

Defendants may not have an obligation to reveal the factors applied by an algorithm, as it is sufficient to show that a certain practice serves a legitimate aim and is proportionate. However, the GDPR is complemented by the Guidelines, which suggest that companies assess datasets for biases, regularly review the accuracy and relevance of decisions, deploy systems that audit algorithms and use ‘appropriate procedures and measures to prevent errors, inaccuracies or discrimination’ based on sensitive data.¹¹⁶ Moreover, the DPIA should ensure algorithmic legibility and accountability due to allocating a set of duties to the data controller, who must explain ‘the measures envisaged to address the risks, including safeguards, security measures and mechanisms to ensure the protection of personal data’. Considering the proposed integrated strategy, this disclosure can provide valid arguments that substantiate a *prima facie* claim or, at least, prompt ex ante compliance. The DPIA is meant to be accessible by default and could also be used to rebut evidence produced by the respondent in an effort to discharge the burden of proof.

¹¹⁴ Case C-415/10 (para. 47). The employer’s refusal to disclose information can ‘make his decisions virtually unchallengeable. [...] In the context of a recruitment procedure, [...] the position of the applicant—inevitably external to the undertaking in question—makes obtaining evidence or facts from which it may be presumed that there has been discrimination even more difficult than if the applicant sought to prove that the employer applies discriminatory measures in respect of conditions of employees’ pay, for example’ (para 32), Opinion of Advocate General Mengozzi delivered on 12 January 2012 Case C-415/10 *Galina Meister v Speech Design Carrier Systems GmbH*.

¹¹⁵ See also Case No. 109/88 *Handels-og Kontorfunktionærernes Forbund I Danmark v. Dansk Arbejdsgiverforening, acting on behalf of Danfoss* 17 October 1989 ECLI:EU:C:1989:383 (‘where an undertaking applies a system of pay which is totally lacking in transparency, it is for the employer to prove that his practice in the matter of wages is not discriminatory, if a female worker establishes, in relation to a relatively large number of employees, that the average pay for women is less than that for men’ [para 16]). In Case C-104/10 *Patrick Kelly v National University of Ireland (University College, Dublin)*, ECLI:EU:C:2011:506, the CJEU held that ‘a refusal of disclosure by the defendant, in the context of establishing such facts, could risk compromising the achievement of the objective pursued by [the burden of proof] directive and thus depriving, in particular, Art. 4(1) thereof of its effectiveness’ (para 39).

¹¹⁶ Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679, 28.

Despite the non-negligible merits of building compliance, Art. 35 of the GDPR could also offer a shield to employers when indirect discrimination is contested.¹¹⁷ In particular, the putative offender could acknowledge the risk of neutral practices resulting in disparate impacts and lay the groundwork for proving in court that there is an objective justification and proportionate means of achieving a legitimate aim, as supported by a demonstration of technical performance for refuting the presumption of discrimination. Yet, the mere reliance on nominal assertions of bias prevention mechanisms cannot insulate employers from the risk of losing in court.¹¹⁸ It is important that exceptions are formulated narrowly and that the necessity, adequacy and proportionality of criteria and practice are examined.

3.3. Enabling collective rights to temper algorithmic power

Due to several intrinsic attributes of the labour market, such as imperfect information and near-monopsony, workers have traditionally joined forces to form a vigorous counterpower. Worker involvement is a realistic strategy that has the advantage of avoiding the self- or de-regulatory tendencies that could arise from approaches focused on ethical codes or auditing, which are gaining prominence in the academic and policy debate despite lacking any meaningful binding force.¹¹⁹ Drawing on a variety of methods, collective labour law can lead the way and offer large-scale normative solutions to be implemented beyond its boundaries.¹²⁰ Without minimising the loss of force of institutional paradigms of workplace voices and industrial relations, let alone the difficulties of exercising collective rights in fragmented labour markets, a renewed cooperative perspective should prove advantageous for the reasons set out below.

First, the existing legal framework fleshes out information and consultation mechanisms that entail the involvement of workers as a countervailing force.¹²¹ In several EU countries such as Italy, Spain and Germany, while employee monitoring is mostly justified solely for legitimate business purposes, the introduction of devices with data capturing capabilities must follow prior information and consultation or codetermination that provide worker representatives with a say and even a veto prerogative as regards the aims and mechanisms of data management. Such involvement must be performed from the earliest phases when companies are considering the installation or revision of electronic devices. Moreover, this procedural requirement lays the foundation of lawfulness for data collecting and processing (Art. 5 of the GDPR) to be supported by proof of necessary and proportionate company interest. Notice is necessary for the

¹¹⁷ Anna Beale, “Proving discrimination: The shift of the burden of proof and access to evidence”, *Academy of European Law* (2018).

¹¹⁸ In relation to assessing employers’ justifications, see Case C-188/15 *Asma Bougnaoui and Association de défense des droits de l’homme (ADDH) v Micropole SA* 14 March 2017 (preferences expressed by customers in rating and scoring should not lawfully inform workers’ pay or influence their working conditions in discriminatory ways).

¹¹⁹ Pauline Kim, “Auditing algorithms for discrimination”, 166 *U Pa L Rev Online* 189 (2017).

¹²⁰ Alessandro Mantelero, “From group privacy to collective privacy: Towards a new dimension of privacy and data protection in the big data era”, in Linnet Taylor, Bart van der Sloot and Luciano Floridi (Eds.), *Group Privacy: New Challenges of Data Technologies* (Springer, 2017), 139-158.

¹²¹ Directive 2002/14/EC of the European Parliament and of the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the EC.

processing to be proportionate. Failure to comply with these requirements may result in the prohibition of using information unlawfully captured and lead to sanctions.

It has rightly been pointed out that social dialogue and other participatory methods are more impactful than technological solutionist fixes ‘through further data collection and algorithmic sophistication’.¹²² Industry-wide and company-level collective bargaining agreements that are sufficiently comprehensive to include rules on the adoption and deployment of technologies such as ADMS can outsmart the current ‘ex post damage-control approach’,¹²³ so long as they are meaningfully implemented using practices such as inspections, minimisation, correction and erasure. Responsive methods have succeeded in accelerating adaptation to the changing world of work in numerous fields.¹²⁴ The new European Social Partners’ Framework Agreement on Digitalisation (FAD), which was signed in 2020, calls for the implementation of the ‘human in control principle’, claiming that AI applications must ‘be transparent and explicable with effective oversight [depending on] the context, severity and consequences’ (Art. 3 of the FAD).¹²⁵ With regard to HMR practices, the FAD requires data transparency and states that workers have the right to human intervention, objection and the ‘testing of the AI outcomes’.¹²⁶

The GDPR states that Member States may introduce, whether by law or by a collective agreement, ‘specific rules to ensure the protection of the rights and freedoms in respect of the processing of employees’ personal data in the employment context’ with the aim of overriding fully or semi-automated decisional processes. Such rules shall comprise ‘suitable and specific measures to safeguard the data subject’s human dignity, legitimate interests and fundamental rights’, including equality (Art. 88 of the GDPR). These measures should be read as the *sine qua non* of the legitimate exercise of managerial power. In two recent orders issued against the platforms Glovo and Deliveroo, the Italian DPA (Garante Privacy) interpreted the GDPR provisions concerning lawfulness and processing in the context of employment as making a referral to rules laid down in the national Workers’ Statute, which provides a more protective system than the GDPR framework.¹²⁷ Art. 88 of the GDPR was read as enabling rigorous national requirements mandating the prior involvement of worker representatives or otherwise of administrative

¹²² Lina Dencik, “Towards data justice unionism? A labour perspective on AI governance”, in Pieter Verdegem (Ed.), *AI for Everyone? Critical Perspectives* (University of Westminster Press, 2021), 267-284.

¹²³ Valerio De Stefano and Simon Taes, “Algorithmic management and collective bargaining”, *ETUI Foresight Brief* (2021).

¹²⁴ OECD, *Negotiating Our Way Up: Collective Bargaining in a Changing World of Work* (OECD Publishing, 2019); Barbora Černušáková, “Collectively against workers’ surveillance”, paper presented at IE Lawtoration Days, 29-20 September 2022, Madrid.

¹²⁵ Available at <https://bit.ly/3xCsXK3>. David Mangan, “Agreement to discuss: The social partners address the digitalisation of work,” 50 *Ind Law J* 689-705 (2021). See also European Social Dialogue Work Programme 2022-2024, available at <https://bit.ly/3qMIAtp>.

¹²⁶ TUC, *When AI is the boss: An introduction for union reps* (TUC, 2021); Prospect, *Data Protection Impact Assessments: A Union Guide* (Prospect, 2020); Lighthouse, *A Guide to Good Data Stewardship for Trade Unions* (Lighthouse, 2021); UNI Europa, *Algorithmic Management – A Trade Union Guide* (UNI Europa, 2020).

¹²⁷ See also Art. 58(1) of the GDPR. Italian DPA, 10 June 2021, No. 234; Italian DPA, 22 July 2021, No. 285.

bodies as a precondition for the introduction of technologies that may result in surveillance and profiling, reinforcing the co-determination rights.¹²⁸

At the national level, Spain has gone so far as to include a collective right to be informed by companies about the parameters and metrics factored in when delivering decisional outcomes that affect individuals.¹²⁹ Similarly, the proposed EU Platform Work Directive imposes information and consultation of platform workers' representatives on digital platforms concerning automated monitoring and decision-making systems.¹³⁰ All 'gig-workers' must be informed about the adoption of such instruments, the categories of activities monitored, supervised or evaluated,¹³¹ the types of decisions made, the parameters considered and their relative weights, and the motivation behind any decision that impacts the worker's 'contractual status or any decision with similar effects'.

Second, data protection and equality law empower the entities that represent collective (legitimate) interests, both at the level of participation in multistakeholder risk-assessment procedures and in the *ex-post* litigation.¹³² This is consistent with data protection co-governance tools and should contribute to elucidating potential discriminatory risks. The assumption is that having workers 'on board' streamlines processes and secures compliance. Perceived as institutional 'data clearing houses' or even as 'data cooperatives' *avant la lettre*,¹³³ works councils and shop floor worker representation bodies facilitate the knowledge sharing process. This information transfer is all the more important in asymmetric situations where turnover, short-lived contracts and decentralised teams impair the ability to understand whether the unfair treatment has been or is likely to occur. Together with trade unions, whether long-established or grassroots, worker representatives at the company level can help to lower the barrier for 'individuals without specialized knowledge' and collect 'convenient evidence for a fact finder'¹³⁴ in barely accessible matters, while also supporting judicial discovery in non-discrimination proceedings thanks to their longitudinal viewpoint. Other successful tactics may include public contestation to trigger 'market mechanisms or regulatory feedback from the public or oversight by external experts'.¹³⁵

In case of friction, trade unions and non-profit entities can be delegated to act on behalf of workers when it comes to lodging data protection or non-discrimination complaints

¹²⁸ Halefom H. Abraha, "A pragmatic compromise? The role of Article 88 GDPR in upholding privacy in the workplace" *International Data Privacy Law* (2022).

¹²⁹ Jefatura del Estado, "Real Decreto-ley 9/2021, de 11 de mayo, para garantizar los derechos laborales de las personas dedicadas al reparto en el ámbito de plataformas digitales", 113 *BOE* (2021), 56733. See also Guide to corporate obligations on the use of algorithmic information in the workplace and instrument for practical application, May 2022, <https://prensa.mites.gob.es/WebPrensa/noticias/laboral/detalle/4125>

¹³⁰ Art. 9, Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work COM(2021) 762 final 2021/0414.

¹³¹ Art. 6(2), Proposal for a Directive of the European Parliament and of the Council on improving working conditions in platform work COM(2021) 762 final 2021/0414.

¹³² The All Party Parliamentary Group for the Future of Work, "The New Frontier: Artificial Intelligence at Work", 2021, <https://bit.ly/3dSsE2o>.

¹³³ Katharine Miller, "Radical proposal: Data cooperatives could give us more power over our data", *Human-Centered Artificial Intelligence*, Stanford University, 20 October 2021.

¹³⁴ Ari Ezra Waldman, "Power, process, and automated decision-making", 88 *Fordham L Rev* 629 (2019).

¹³⁵ Margot E. Kaminski and Gianclaudio Malgieri (2020), n. 64.

with a supervisory authority or pursuing a judicial remedy.¹³⁶ Trade union representatives can also file a claim before a court or exercise a data protection right before the employer or the DPA ‘independently of a data subject’s mandate’ (Art. 80 of the GDPR). In several EU jurisdictions, the lack of an identifiable individual victim does not constitute an obstacle for collective claimants such as trade unions in discrimination proceedings.¹³⁷ The salience of strategic litigation is further demonstrated by the fact that preliminary judicial successes with regard to holding algorithm adopters accountable have stemmed from union-led initiatives with stronger deterrent effects than individual claims.¹³⁸

Lastly, there is perhaps a less discussed motivation justifying the need to collectively engage in workplace technology adoption. Co-designing the implementation of the ADMS used for scheduling, performance evaluation and work assignment, as well as the way in which they operate, may prove particularly beneficial in relation to workers’ better mental and physical health and, relatedly, business productivity.¹³⁹ Worker representatives are in the best position to draw up internal rules due to their capacity-building and vast knowledge of operational practices and internal hurdles. Hence, the active participation of workers confers several types of advantages on businesses. Given the correspondence between the designer of the assessment model and the evaluation subjects, noisy and misleading metrics that capture erroneous parameters can be excluded. Additionally, due to peer knowledge of the ADMS, workers are discouraged from gaming the model because their colleagues would likely respond reciprocally.

When their autonomy is strengthened, workers feel empowered ‘to improve the measurement properties rather than risk the imposition of metrics that poorly reflect the operational characteristics of their work’.¹⁴⁰ Harnessing their full potential in terms of improving the overall work experience and enhancing the general well-being might require employees to be provided with latitude in deciding what is to be measured and how. A survey of union members revealed that one in two felt that ‘better consultation would make technology more effective’.¹⁴¹ Contrariwise, introducing technology-

¹³⁶ For example, see Art. 9(2) of Council Directive 2000/78/EC of 27 November 2000 establishing a general framework for equal treatment in employment and occupation. The same rights are laid down in the proposed EU Platform Work Directive (Art. 14), which enables trade unions entitled to ‘act on behalf or in support’ of a person or several persons. See Zane Rasnača, *Collective redress for the enforcement of labour law*, 12(4) Eur. Lab. L.J. 405 (2021).

¹³⁷ Christina Hießl, *Case law on algorithmic management at the workplace: Cross-European comparative analysis and tentative conclusions* (European Commission, Directorate DG Employment, Social Affairs and Inclusion, 2021).

¹³⁸ Reventlow, “Making accountability real: Strategic litigation”, *Digital Freedom Fund*, 30 January 2020, <https://digitalfreedomfund.org/making-accountability-real-strategic-litigation/>; AI Now Institute, *Litigating Algorithms: Challenging Government Use of Algorithmic Decision Systems* (2018).

¹³⁹ Douglas Zytko, Pamela J. Wisniewski, Shion Guha, Eric P. S. Baumer and Min Kyung Lee, “Participatory algorithmic management: Elicitation methods for worker well-being models”, *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society* 715-726 (2021).

¹⁴⁰ Bianca A.C. Groen, Marc Wouters, Celeste P.M. Wilderom, “Employee participation, performance metrics, and job performance: A survey study based on self-determination theory”, 51 *Manag Account Res* 10 (2017). See also C. Scott Rigby and Richard M. Ryan, “Self-determination theory in human resource development: New directions and practical considerations”, 20 *Adv Dev Hum Resour* 133 (2018).

¹⁴¹ Abigail Gilbert and Anna Thomas, *The Amazonian era: How algorithmic systems are eroding good work* (Institute for the Future of Work, 2021), 29.

enabled models with the sole aim of monitoring, punishing or reducing costs could prompt a negative reception. Worker-centric workplace practices might increase employees' efforts and enhance their performance through confidence and job enrichment, thereby fostering a positive social identity. This should ensure that mutual trust flourishes and, therefore, avoid any loss of competitiveness and engagement.

Although the importance of mastering digital literacy cannot be underestimated, worker involvement does not necessarily presuppose the ability to 'speak' computational language. Rather, what is important is the ability to expose, document and influence the logic underlying automated systems while enforcing the full suite of available legal solutions intended to counterbalance the augmentation of employer powers.¹⁴² Notably, the proposed EU Platform Work Directive also provides for the possibility of assistance by an expert chosen by 'gig workers' or their representatives to examine the matter that is subject to information and consultation and formulate an informed opinion (Art. 9).

Taken together, these points corroborate the importance of changing perspective. It has been claimed that algorithmic management 'harms typically arise from how systems classify and stigmatise groups'.¹⁴³ This intrinsic 'data network effect' requires responses at the collective level, which is generally a neglected dimension when it is not undermined in an open or covert way. Leaving workers to their own devices could result in the exacerbation of current perils, to say nothing of the constant legal uncertainty that developers, providers and users would all face. On the contrary, bringing workers and their representatives to the table when algorithmic management practices are designed, developed and deployed will likely ensure more benign uses of workplace technologies.

4 FINAL REMARKS

Algorithms are playing bosses' roles and becoming involved in all critical workplace decisions due to the tentacular infrastructure for capturing data. Following the emergence of concentrated, highly bureaucratic and vertical entities, employment-related limits have evolved to cater for the transformation of production models and the parallel intensification of employer powers. Their main purpose has been to extend workers' freedom through both supporting and restraining the authority of management, however it may be exercised. The most recent shift calls into question the suitability of canonical safeguards that have been calibrated using a less insidious form of power. Rather than indolently postulating the obsolescence of existing legislation or denouncing its capacity to obstruct innovation, it must be admitted that data protection and equality law include legal 'enzymes' that can facilitate adaptation to fast-paced digitised environments by heightening the speed of reactions to new modes of workplace governance.

To confront the legitimacy crisis that AI-driven management may suffer, it is important to combine data protection, equality law and participatory rights, rather than to view them as incompatible toolboxes. The preceding sections have enumerated several GDPR and

¹⁴² Alessandro Mantelero, *Artificial Intelligence and Data Protection: Challenges and Possible Remedies* (EU Directorate General of Human Rights and Rule of Law, 2019).

¹⁴³ Lilian Edwards and Michael Veale (2017), n. 58.

non-discrimination provisions that, far from being symbolic, can be jointly read to render data-driven practices accountable and contestable. Such tools must be applied in a pragmatic and elastic manner to offer responsive answers to the challenges posed by the advent of algorithmic bosses. This paper has sought to show the multi-layered, collaborative architectures that ease compliance with existing legal frameworks *ex ante* rather than retrospectively so as to counter the power expansion before it materialises in practice, which may result in detrimental effects for workers and legal uncertainties for technology deployers. Both labour courts and DPAs, when acting as near-judicial bodies in their fields of competence, have demonstrated that it is possible to combine elements from different thematic areas, thereby crafting future-proof legal mechanisms.

As previously argued, workers can rely on process-oriented mechanisms such as the DPIA and the information and access rights afforded by the GDPR to (re)gain sovereignty and control over their personal data. Aside from a ‘right not to be subject’ to automated individual decision-making, workers can count on additional rights such as human intervention on the part of the data controller, explanation and contestation when it comes to safeguarding their rights, freedoms and legitimate interests. Concomitantly, equality law offers other appealing instruments, including discrimination by proxy, legal presumptions and the reversal of the burden of proof. These remedies may prove more fruitful than reconstructing the subtleties of how a model works, something that is often overemphasised at the expense of shaping compliant business practices.

However, data protection law is conceived as ‘defensive in nature’,¹⁴⁴ thus partially ill-suited when it comes to addressing the dynamics underpinning digital HRM. At the same time, non-discrimination rules struggle to capture the disparate effects stemming from practices affecting persons who hold characteristics outside the traditional circle of protected grounds. Additional limitations concern access to evidence when information is unevenly distributed. Moreover, both sets of rights have predominantly been interpreted as individual entitlements, with little focus on social solidarity.¹⁴⁵

These process-based strategies are bound to fail if implemented solely from an individual perspective and almost exclusively in a resistive manner. Workplace data are intrinsically and eminently relational, plural and built on ‘population-level insights regarding how data subjects relate to others, not individual insights specific to the data subject’.¹⁴⁶ Predictions and prescriptions see workers as ‘assemblages of their social relations and group

¹⁴⁴ Ilaria Armaroli and Emanuele Dagnino, “A seat at the table: Negotiating data processing in the workplace. A national case study and comparative insights”, 41 *Comp Labor Law Policy J* 179 (2019).

¹⁴⁵ Raphaël Gellert, Katja de Vries, Paul de Hert and Serge Gutwirth, “A comparative analysis of anti-discrimination and data protection legislations”, in Bart Custers, Toon Calders, Bart Schermer and Tal Zarsky (Eds.), *Discrimination and Privacy in the Information Society* (Springer, 2013), 61-89. See also Karen Yeung, Andrew Howes and Ganna Pogrebna, “AI governance by human rights-centered design, deliberation, and oversight”, in Markus D. Dubber, Frank Pasquale and Sunit Das (Eds.), *The Oxford Handbook of Ethics of AI* (Oxford University Press, 2020); Karin Mika, “Privacy in the Workplace: Are Collective Bargaining Agreements a Place to Start Formulating More Uniform Standards” *Willamette L. Rev.* 49 (2012).

¹⁴⁶ Salome Viljoen, “Democratic data: A relational theory for data governance”, 13 *Yale Law J* 573-654 (2021)

behaviors'.¹⁴⁷ At the personal level, data are of (almost) no value: decisions concerning workers are made by means of profiling, comparisons, scoring and clustering, often without informing individuals about their membership in a given class. The task of taming the domination exerted by 'automated' bosses over their employees requires the practical mobilisation of convergent regulation to exercise power in a bottom-up fashion, as managerial functions primarily impact categories and groups.¹⁴⁸ Thus, it is vital to rely on controlling factors that are deployed in the collective dimension as they are more impactful when it comes to facilitating knowledge sharing, lowering administrative costs, achieving far-reaching deterrent effects and minimising the risks of retaliation.

This paper has shown that the complexity of AI-driven tools must be addressed beyond thematic boundaries and idiosyncratic approaches. This has already started to change, as many responsive collective agreements and strategic litigation examples demonstrate. Labour law tools have kept abreast of the much advocated 'human-in-command' function in an integrationist sense due to the alliance with neighbouring fields such as data protection and equality law. Hence, an inventive blend of old and modern counterpowers can play a crucial role amid the current (and future) algorithmic turbulences.

¹⁴⁷ Salome Viljoen (2021), n. 146.

¹⁴⁸ Brent Mittelstadt, "From individual to group privacy in big data analytics", 30 *Philos Technol* 475-494 (2017).