



Collins, P. M., & Atkinson, J. (2024). *Algorithmic Management and a New Generation of Rights at Work*. Institute of Employment Rights, London.

Publisher's PDF, also known as Version of record

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Algorithmic Management and a New Generation of Rights at Work

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ISBN 978-1-906703-62-2
January 2024

published by the
Institute of
Employment Rights
4th Floor, Jack Jones
House, 1 Islington,
Liverpool, L3 8EG

e-mail office@ier.org.uk
www.ier.org.uk

Design and layout by
Kavita Graphics (TU)
kavitagraphics.co.uk

Printed by Chapel Press
www.chapelpress.com

£10 for trade unions and
students. £33 others

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contents

Executive Summary	1
1 Introduction	1
2 The rise of algorithmic management	3
3 The challenges of algorithmic management	5
3.1 Worker voice	5
3.2 Decent work	6
3.3 Human rights	7
4 A regulatory map: what does the law say about algorithmic management?	9
4.1 Collective bargaining	9
4.2 Health and safety law	11
4.3 Data protection law	11
4.4 Equality law	14
4.5 The law of unfair dismissal	16
5 Rights at work in an age of algorithmic management: a new framework	18
5.1 Ensuring worker voice	18
5.2 A new generation of rights for the era of algorithmic management	21
– Who should be protected?	21
– What rights are necessary?	22
– How should this framework be enforced?	24
6 Conclusion	27
Notes	28

executive summary

Technology has revolutionised the way we work in the last 30 years. Now, it is radically changing the way that we are managed at work. Rather than a traditional line manager, many workers are recruited, directed, and disciplined by management systems that generate recommendations through the application of complex algorithms and are underpinned by huge amounts of data processing about workers and workplaces. These practices pose a pressing threat to the enjoyment of decent working conditions, as well as to the effective use of worker voice and to workers' exercise of their human rights.

Whilst there are existing rights and regulations that should inform the development and deployment of algorithmic management systems, these are ineffective in several ways. In addition to shortcomings in the content of current worker protections, there are significant barriers to access to justice that prevent workers from enforcing these rights, and those most affected by these innovations will often fall outside the protective scope of the regulations. A new approach is necessary. The participation of worker representatives in decision-making regarding the use of technology in the workplace must be enhanced: expertly trained and well-informed Technology Representatives should be introduced, alongside a reduction in the barriers to collective negotiation and action that currently prevent the effective representation of workers' interests in the workplace.

Strengthened worker voice must also be complemented by a novel framework of rights and responsibilities tailored specifically to the challenges created by algorithmic management. These would include guarantees that systems are implemented in a manner that respects human rights, a right to contest any decision made, and prohibitions of some technologies that amount to an unjustifiable interference with the rights of individuals. Rather than being limited to labour law's historic categories of 'employee' or 'worker', any individual whose working conditions are determined or influenced by algorithmic processes should benefit from these rights. Enforcement of these and other relevant provisions should be strengthened by establishing a new regulator with

responsibility for licencing and ensuring compliance of algorithmic management systems. In addition, joint liability for rights infringements should be imposed on any companies developing and marketing algorithmic management tools, to ensure that working people's interests are adequately considered at all stages of the technological life cycle.

1 introduction

Technology is once again transforming the world of work. The introduction of new technologies in the workplace has long been a site of tension and contestation between workers and employers, due to concerns about job destruction and degradation of working conditions. This issue has taken on a new dimension in recent years, however, as employers are increasingly using new technologies to undertake or augment *managerial* functions rather than *production* processes. This is largely due to the emergence of algorithmic management (AM), meaning the use of 'technological tools and techniques to remotely manage workforces, relying on data collection and surveillance of workers to enable automated or semi-automated decision-making'.¹ Algorithmic systems are increasingly being used by employers to carry out a wide range of employer functions.² These practices heighten longstanding problems within the employment relationship and create a range of new threats to decent work. In short, they present an urgent agenda that must be responded to.³

There is growing awareness of the risks of algorithmic management among researchers and policymakers, with both EU and national authorities around the world considering how best to respond to these developments in the labour market.⁴ In stark contrast, the UK's recently published white paper adopts a notably hands-off approach to regulating artificial-intelligence tools, including those used in algorithmic management.⁵ There are currently no plans to introduce any new legal constraints on the use of these technologies at work. Indeed, the government is pushing ahead with deregulatory measures in this field, and the proposed Data Protection and Digital Information Bill (No. 2) will make it easier for employers to deploy algorithmic management systems.

This paper firmly rejects the current government's *laissez faire* approach to the regulation of algorithmic management and sets out an alternate reform agenda that should be pursued to ensure decent work and respect for workers' rights in the age of the algorithm. Sections two and three provide an overview of how algorithmic tools are being used to manage workers and the problems that arise from these practices. Section four sets out and identifies a number of weaknesses in the

existing regulatory frameworks that constrain the use of AM systems. These shortcomings relate to both the *scope* and *substantive* level of protection provided under the current law, as well as the *enforcement* mechanisms available. Finally, section five proposes a series of reforms which will ensure workers can exercise voice and have their interests reflected in the development and deployment of algorithmic management, and that they have effective redress for any infringements of their rights that result from the use of these systems.

2 the rise of algorithmic management

Algorithmic management tools are now being deployed by employers throughout the full cycle of the employment relationship and at each major point of contact between workers and their employers. From recruitment of new staff and the day-to-day management of tasks, through to disciplinary action and the termination of employment, management functions can now be delegated entirely to technology or significantly bolstered by the use of algorithms.⁶ Whilst algorithmic management originated, and remains most prevalent, in the context of platform work, these practices are increasingly spreading to other sectors of the labour market.⁷ In addition, the covid-19 pandemic accelerated this uptake of algorithmic monitoring and management as employers sought to manage and control newly remote workforces.⁸

Three brief case studies can be used to demonstrate how algorithmic management operates. A worker's first point of contact with an employer, the sourcing, screening, shortlisting and selection of candidates, is the most likely to be mediated by an algorithm.⁹ A major provider of recruitment software packages is HireVue. HireVue's aim is to use algorithmic assessment methods to identify candidates who are likely to be high performing. It takes data from current employees or job descriptions to create a benchmark, analysing a huge number of data points to provide a score and rank position for candidates. Candidates' CVs are screened for key words, they play psychometric games, write written answers and record 'live' video responses to questions set by the client company. Facial expression and emotional recognition analysis are combined with natural language processing and speech-recognition tools to, according to HireVue, gain insights into candidates' interpersonal skills, personality, decision-making, reasoning skills and many more attributes. Candidates that fail to meet the benchmark set by the client company are automatically rejected.¹⁰

Algorithmic management dictates much more than who is hired. It can be used to issue instructions, allocate tasks and shift-patterns, process requests for leave, and 'nudge' workers into behaving in a particular manner. Even further, systems can be used to evaluate workers in real

time and issue disciplinary measures, including suspensions and terminations of employment. Workers in Amazon's fulfilment centres, for example, carry handheld devices that issue instructions and track their movements minute to minute. The algorithm coordinates the work of different groups: 'stowers', 'pickers', 'packers', etc. Pickers are shown pictorial directions for what items to pick,¹¹ directed where to find them in the randomised storage system, and expected to adhere to the 'Amazon pace' for the duration of their shifts: not running but walking as fast as possible.¹² Workers are issued with warnings if their 'Time Off Task' is considered too high: this time includes bathroom and eating breaks. Each individual's pick-rate (speed of work) is ranked against their colleagues, and managers discipline or even dismiss workers considered to be too slow.¹³ The algorithm thereby determines and measures work performance, evaluates workers and forms the main basis for disciplinary decisions. The role of the manager is to execute the algorithm's recommendations, rather than to apply independent judgement and form a relationship with the staff team.

The involvement of algorithms does not end there. Workers may be flagged as failing to meet the technologically determined standards or suffer sanctions on the basis of the algorithm's outcomes. Less frequently, the management system may implement disciplinary measures directly without human intervention. At Uber,¹⁴ for instance, algorithms evaluate compliance with its rules regarding cancellation and acceptance of tasks and issues warnings followed by a 'log off' penalty if drivers do not meet them. Similarly, if a driver's customer score rating falls below an average of 4.4/5, interventions are offered by the software package. If the score does not improve, the driver's account will be deactivated and their contract with Uber terminated. Uber's algorithms are also used to pick up apparent 'driver offences', such as misuse of the app or fraudulent behaviour. Uber's Risk Team conducts an investigation and can decide to deactivate the relevant account, although this is not much more than a 'symbolic act' and they are not required to discuss the issue with the driver before deactivation.¹⁵ Built upon a wider structure of digital monitoring and real-time surveillance of workers, the termination of employment based on an algorithm's recommendation is the worrying endpoint of management-by-algorithm.

3 the challenges of algorithmic management

What are the challenges and detrimental effects of algorithmic management from the perspective of workers who are subject to these tools? Three broad, but interconnected, categories of impact can be identified: on worker voice, on the quality of work and working conditions, and on workers' human rights.

3.1 Worker voice

Among the most significant challenges of algorithmic management from a labour-law perspective is that these practices often mean workers and their representatives have little opportunity to exercise voice and participate in the governance of the workplace. Much of the difficulty arises from the pervasive lack of transparency about almost all aspects of algorithmic management.¹⁶ Workers are generally unaware what systems are being used, which decisions are being made or influenced by these systems, as well as what data is being processed and how these inputs are used to create the recommendations or outputs of the algorithm. Without knowledge of these matters, workers are left to speculate regarding how their work is being managed and evaluated. How can individual workers challenge, and trade unions bargain effectively over, the use of systems that they are unaware of?

In addition to transparency concerns, there are at least two features of algorithmic management that threaten to undermine worker voice. First, the complexity of algorithmic systems, and the technical expertise required to engage with them, is a significant barrier to workers challenging their outputs.¹⁷ This is reflected in the finding by the TUC that only 21% of workers surveyed were confident that they or their union could effectively challenge decisions made by algorithmic management tools.¹⁸

The second novel challenge is the disconnect between the designers of management packages and those who are subject to them. In some cases, there is a complete separation because the algorithmic software is bought in from third-party suppliers, such as HireVue. Workers and unions have no relationship with these companies, and no straightforward way to influence their design processes. In other instances, like Amazon and Uber,

although development teams build the software within the company, they do so purely with efficiency and performance in mind and the workers at the sharp end of these systems have no say in their development.

More broadly, the use of algorithmic management makes it difficult for workers to exercise voice and act collectively because of the detrimental effects it has on working conditions, discussed in the following sub-section. Specifically, by driving precarious and atypical forms of work, and limiting opportunities to build social relationships in the workplace, algorithmic management practices undermine the solidarity and sense of community that is necessary for effective organising and collective voice.¹⁹

3.2 Decent work

The challenges of algorithmic management for worker voice are part of a wider set of concerns about the detrimental effects these systems have on the quality of work and working conditions. These effects are varied, dependent upon the work context and the type of management undertaken by the algorithm. Here we highlight a few recurring issues:

- The intensification of the pace of work or performance expectations, often to such an extent that it is detrimental to the mental and physical health of workers.²⁰
- A reduction in autonomy and de-skilling of work, for both managers and other workers, as algorithmic systems direct decision-making and diminish the need for human expertise and judgement.²¹
- A significant heightening in the level of control exercised over the workforce, with a corresponding increase in worker subordination,²² due to the constant monitoring and real-time evaluation of performance and conduct.
- Errors or biases in the system's training data and outputs can lead to unfair decisions or treatment of workers, which will be difficult to identify due to lack of transparency.²³
- Increased uncertainty regarding how decisions are made in the workplace, leading workers to attempt to 'pacify the algorithm' by guessing what the system rewards and adjusting their behaviours accordingly.²⁴
- The growth of precarious and unstable forms of work, as algorithmic management reduces the transaction costs of contracting for work on a casual basis and extends the capacity of organisations to exercise control at distance.

Stepping back, the overarching impact of algorithmic management is to have a *dehumanising* effect on work. Algorithmic management tends to individualise the working experience. Workers are ranked against each other, tasks and production processes can be designed to minimise social contact, and the intensive pace of work demanded by the algorithm may render it impossible to establish connections with one's colleagues. Similarly, the relationship with one's managers is damaged. Managers can be made responsible for larger numbers of workers who they direct remotely without ever meeting. Where decisions are taken or augmented by algorithmic systems this removes or reduces the personal relationship present in traditional line-management structures. Algorithmic management therefore prevents workers developing the social bonds and relationships which help give work meaning and value, as well as detracting from the distinctive value of the workplace as a shared community.²⁵

The combined effect of the above phenomena is a recommodification of labour. Workers are viewed less as individual people, and more as a collection of data points to be analysed and an object to be directed. Algorithmic management obscures the employer's sense of responsibility towards each worker as a human being with agency, autonomy, dignity and a valuable set of skills that her employer should help to develop.

3.3 Human rights

The detrimental effects of algorithmic management outlined above threaten to undermine workers' right to freedom of association, which encompasses the right for workers to organise and bargain collectively,²⁶ as well as the right to fair and just working conditions.²⁷ However, a range of other human rights are also put at risk by algorithmic management.²⁸ The systematic collection of data and monitoring of workers creates a significant threat to each individual's right to privacy.²⁹ In addition to workers' movements and task performance being intensively surveilled at work, this risk extends beyond working-time and -space where devices, such as mobile phones and smart watches,³⁰ are tracked or their personal communications, activities or social-media profiles are monitored.

Algorithmic management threatens workers' rights to equality and non-discrimination because they have consistently been shown to produce biased and discriminatory outputs.³¹ Although it will (hopefully) be rare

for algorithmic systems to discriminate directly by making decisions based on personal characteristics such as race, religion or gender, they may nevertheless rely on combinations of other factors that amount to close correlatives or proxies for these characteristics. The combination of postcode and educational history, for instance, may act as a proxy for ethnicity in some circumstances. Algorithmic management systems may also reflect the biased assumptions or choices of those developing them, or historical biases and discrimination that is contained in their 'training data'. The infamous Amazon hiring algorithm that marked applicants down if their CV's contained the word 'women's' is an example of this.³² As a result of biases or inequalities in training data, algorithmic systems may be less accurate when applied to certain groups, such as facial recognition technology struggling to recognise people of colour,³³ or they may fail to account for a groups' particular needs, such as those with a religious belief or disability. Algorithmic management is therefore likely to reproduce and even amplify existing inequalities and discrimination in the workplace.

It was mentioned above that the dehumanising effects of algorithmic management creates an environment hostile to solidarity and collective organising. But freedom of association may also be threatened more directly. Algorithms can analyse worker communications and online activities to identify likely union members and organisers, allowing employers to take pre-emptive measures to undermine workers' freedom of association such as arranging shift patterns or working locations in a way that separates union activists.³⁴ There are also examples of algorithms and platforms penalising or offering less work to individuals who have been involved in union activities and industrial action.³⁵ Other rights at risk from algorithmic management include freedom of expression, which could be chilled by algorithmic tools that screen and monitor workers' social media, and freedom of thought which may be undermined by technologies intended to monitor and manipulate workers' emotions and personal choices. We can see, therefore, that algorithmic management creates a full-frontal challenge to workers' enjoyment of human rights within and beyond the workplace.

4 a regulatory map: what does the law say about algorithmic management?

It is evident from the above that, if left unchecked, the use of algorithmic management tools will have a range of negative impacts on workers. Despite this, the default position under English law is that workers have no say over the systems and processes adopted by employers.³⁶ Instead, the law confers on employers a broad managerial prerogative to govern the workplace as they see fit and imposes a duty on employees to obey all reasonable and lawful instructions issued by their employers and managers. This authority of employers extends to matters relating to the organisation and management of production processes, including decisions and instructions relating to the adoption or implementation of new systems and technologies in the workplace.³⁷

While expansive, this managerial prerogative is not unlimited in the context of algorithmic management. Employers' adoption and implementation of algorithmic tools in the workplace are subject to a range of statutory regulations which should guide their conduct. There are also common-law duties that apply to employers during the employment relationship which have the potential to limit their authority to deploy algorithmic management systems.³⁸ However, the focus here is on the legislative mechanisms that constrain algorithmic management. The following sub-sections provide an overview of some key frameworks and how these existing mechanisms fail to protect workers adequately.

4.1 Collective bargaining

Legal frameworks that facilitate effective worker voice and control over algorithmic management provide the best route to avoiding and mitigating the harms of these technologies. The agile nature of this form of workplace (self-)regulation means it can adapt to the rapidly changing practices of employers and be tailored to the context of specific workplaces. In contrast, statutory rights and protections may be outdated by the time they have made their way through Parliament, let alone litigated and enforced.

In the UK the primary vehicle for worker voice is collective bargaining between trade unions and employers.³⁹ But current legal frameworks

provide limited opportunities and support for unions attempting to negotiate the algorithm.⁴⁰ Unions already recognised by an employer can seek to add algorithmic-management practices to the matters covered by their existing collective agreements, and some unions have had success in doing so.⁴¹ Employers may be reluctant to bargain over these matters, however, in which case unions will struggle to force the issue because the onerous procedural barriers placed on taking industrial action make it difficult for them to apply economic pressure on employers effectively.

In the absence of voluntary recognition and bargaining, a union must turn to the statutory-recognition procedure to seek to bargain with an employer.⁴² If the union is successful under the procedure they have the right to enter into collective bargaining over terms and conditions related to the core issues of pay, hours and holidays.⁴³ Where algorithmic technologies influence these three aspects of work they can therefore be the subject of forced collective negotiation. However, the law suffers from serious shortcomings that mean it falls far short of providing workers with an effective means of responding to algorithmic management, including that:

- the framework only guarantees voice of ‘employees’ and ‘workers’, and denies access to those who are considered independent contractors.⁴⁴
- many uses of algorithmic management will fall outside the scope of mandatory bargaining under the statutory procedure, such as recruitment and evaluation/disciplinary systems.

There are the practical challenges associated with collective bargaining over algorithmic management. Some, such as the lack of expertise amongst union representatives and the prevalence of third-party companies, are discussed above. More fundamentally, collective bargaining over algorithmic management is simply out of reach of most workers in the UK due to low levels of union membership and collective-bargaining coverage. Only 23% of those employed in the UK are trade-union members, and just 26 per cent have (some) terms or conditions established by collective bargaining.⁴⁵ Additionally, the sectors of the labour market where algorithmic management is most developed are among those with the lowest union presence and where collective organising is most difficult. Without drastic legal and social change, therefore, collective bargaining alone cannot offer an adequate response to algorithmic management in the UK.

4.2 Health and safety law

The occupational health risks associated with algorithmic management mean that employers' duties under health and safety law are of some relevance in conditioning and regulating the use of these systems.⁴⁶ Three obligations are worthy of note, which would affect the introduction or use of algorithmic management:

1. A duty not to expose employees and others affected by their undertaking to health and safety risks, as far as is reasonably practicable.⁴⁷
2. Employers must assess the H&S risks of any significant change in working practices.⁴⁸
3. A duty to consult their workforce on any measures that may affect health and safety substantially *and* upon the implications of introducing new technologies into the workplace.⁴⁹

While welcome, these duties are limited in scope. They only relate to the health impacts of algorithmic systems rather than the full range of detrimental impacts they may have on working conditions and rights at work, and they apply only at the initial stage where algorithmic management is introduced rather than mandating ongoing scrutiny and oversight of such systems. The duties also fail to provide workers with any meaningful influence over algorithmic management. Employers are not obliged take account of their concerns and there is little opportunity for workers to challenge employer assertions that algorithmic systems do not pose health risks. Finally, employers often regard these assessment and consultations as little more than tick-box exercises due to the lack of an adequately funded H&S inspection regime that can identify and sanction non-compliance,⁵⁰ and the lack of civil liability for breach of health and safety regulations.⁵¹

4.3 Data-protection law

As algorithmic management is necessarily underpinned by 'prolific' data collection and processing,⁵² the protection of workers as a 'data subject' under data-protection law is an important regulatory dimension to consider. Employers deploying algorithmic systems must comply with a set of principles contained in the UK General Data Protection Regulation (UKGDPR): lawfulness, fairness and transparency; purpose limitation; data minimisation; accuracy; storage limitation, and integrity and confidentiality.⁵³ Each of these principles should have a significant impact

on how employers implement algorithmic management.⁵⁴ Awareness and enforcement of the obligations that UKGDPR imposes on employers is limited, however, and the risk of non-compliance is high where packages are purchased from countries with lower data-protection standards such as the US.

Employers are required by the UKGDPR to conduct impact assessments where data processing poses high risks to the rights of data subjects.⁵⁵ This would apply, for example, when employers use data processing to monitor or control their workers, or if an employer applies data-based tools to evaluate performance at work.⁵⁶ It therefore covers a significant amount of the data processing that algorithmic management is based upon. There is currently no requirement for workers or unions to be consulted in the preparation of an impact assessment, however, nor for it to be made publicly available for inspection.⁵⁷ As a result, data-protection impact assessments represent a missed opportunity for improving worker voice and the fairness of algorithmic management practices.

In addition, data-protection law provides workers with rights that could be used to tackle the lack of transparency surrounding algorithmic management and need for human involvement in decision-making. Article 15 sets out the right of data subjects to obtain their own data and to other information about the processing of their data including:

‘the existence of automated decision-making, including profiling ... [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.’

The right to access this kind of information is a potentially important tool, given the uncertainty frequently reported by workers about the nature and extent of algorithmic management in their workplaces. In practice, however, attempts to utilise the right to gain access to relevant data have been met with mixed success.⁵⁸

The second right that data subjects enjoy is the right not to be subject to a decision based solely on automated processing, contained in Article 22 UKGDPR and section 14 of the Data Protection Act 2018. This form of decision-making is generally prohibited, subject to narrow exceptions.⁵⁹ Even where permitted, a worker has the right to be notified of any automated processing and to request the decision is reconsidered or that the decision is taken in a manner not based on automated processing.⁶⁰

This prohibition on automated processing initially appears an important means of resisting and challenging algorithmic management systems. The difficulty, however, is that the limited scope of the right means that organisations can design their processes so to avoid its effects.

Article 22 also only prohibits decisions based *solely* on automated processes, including profiling, that produce legal effects concerning the data subject or has other *similarly significant effects*. Organisations can therefore avoid the effect of Article 22 by ensuring that decisions are subject to some human review, albeit that the review must be ‘meaningful’.⁶¹ Article 22 can similarly be avoided by using algorithmic technologies in ways that fall short of having legal or similarly significant effects. Examples of ‘profiling’ that would clearly have such effects include the use of algorithms to evaluate workers or to trigger the termination or suspension of contracts. But many other matters may not reach the relevant threshold, such as the allocation of work, shift patterns, remuneration calculations or issuing instructions and monitoring performance. Ubers’ algorithmic systems for pricing rides and matching drivers with customers, for instance, was found to fall outside the scope of Article 22 by the Dutch courts.⁶²

The existing weaknesses with data rights and protections against algorithmic management contained in data-protection law will be further compounded if the Data Protection and Digital Information Bill (No. 2), which is currently making its way through Parliament,⁶³ becomes law. This legislation will make it easier for employers to refuse to disclose information about personal data to workers,⁶⁴ remove many of the obligations employers currently have when carrying out impact assessments for high-risk algorithmic management systems,⁶⁵ and allow them to use automated decision-making systems in a much wider range of situations than currently permitted.⁶⁶

In addition to the limited content of data rights and threat of further deregulation, there are other barriers to using data-protection law as an effective means of regulating algorithmic management. The individualised nature of the rights poses a difficulty as it makes systemic problems within the data-processing impossible to detect.⁶⁷ From a labour-law perspective, the regime does not facilitate collective efforts to use data protection to improve working conditions. The law therefore fails to recognise the distinct risks relating to data-processing that arise in the employment context due the power imbalance between workers

and employers,⁶⁸ and the corresponding importance of facilitating collective action and control over data to counteract these risks.⁶⁹

The ability of data-protection law to constrain algorithmic management is further limited by shortcomings with its enforcement. Crucially, tools like data subject access requests under Article 15 can only be effective if workers understand how the company holds the data, are willing to commit significant time and energy to obtaining the information, and have the technical expertise to interpret the data once it is provided.⁷⁰ Managers responsible for implementing algorithmic management practices may similarly struggle to engage with the legal framework and how it should guide their implementation of algorithmic management. The Information Commissioner's Office (ICO) is also notably less active in its enforcement than equivalent agencies in other jurisdictions,⁷¹ and itself acknowledges that funding constraints mean they 'are unable to look into every matter raised' with them.⁷² As a result, the level of enforcement is low and the overwhelming majority of complaints to the ICO result in no further action being taken.⁷³ These problems are likely to be particularly acute in the context of algorithmic management, given that the ICO has not made data-processing in the workplace a priority area for investigation.⁷⁴ Moreover, complaints to the ICO cannot lead to individual redress for workers where algorithmic systems have violated their data rights,⁷⁵ and they must instead attempt to bring complex, costly and time-consuming civil litigation.

4.4 Equality law

The legal protections against discrimination contained in the Equality Act 2010 may provide a means of challenging and scrutinising algorithmic systems that reflect or amplify existing patterns of discrimination. There are significant hurdles to bringing these types of claims, however, which mean that discrimination law is unlikely to be an effective mechanism to constrain algorithmic management.

The use of algorithmic systems that make use of protected characteristics such as race or sex in their internal operations will amount to unlawful *direct* discrimination if workers with those characteristics are treated less favourably as a result.⁷⁶ The same is true where decisions or recommendations are based on characteristics or combinations of data points that act as precise proxies for protected characteristics.⁷⁷ An example of this is the Amazon recruitment algorithm that marked down

CVs that listed female-only educational establishments or sporting activities.⁷⁸ Algorithmic management practices will also amount to unlawful *indirect* discrimination where they put protected groups at a ‘particular disadvantage’ that cannot be justified as proportionate.⁷⁹ If, for example, minority ethnic groups are less likely to be shortlisted by a CV-screening tool, or are subject to a higher error rate in facial recognition technology than the general population these tools are applied to, then this will amount to indirect discrimination unless it can be objectively justified. The justification of indirectly discriminatory algorithmic management systems turns on whether they achieve a legitimate aim, and whether the systems’ benefits are sufficient to justify its use despite its discriminatory impact.

In practice, however, workers will struggle to use the Equality Act to challenge algorithmic discrimination. In most cases workers will be unaware that they have been subject to a potentially discriminatory algorithmic system. Even when they are, it will be difficult for them to access the information needed to challenge the algorithm successfully. Claimants must provide some evidence that an algorithmic system is discriminatory,⁸⁰ but such information will not be available to them (e.g. the inner workings of the management package and details of all its decisions and outputs).⁸¹ The problems of discovering and proving discrimination are certainly not unique to the algorithmic context, but they are particularly pronounced given the lack of transparency and understanding of such systems.⁸²

In addition, the Equality Act only protects against discrimination involving the listed protected characteristics. It therefore does not guard against algorithmic discrimination on the grounds of other personal characteristics or intersectional identities that may nevertheless amount to unfair reasons for workplace decisions. Algorithms may, for instance, lawfully discriminate against workers on grounds that are not protected characteristics, such as social class and personal opinions that do not amount to protected philosophical beliefs.⁸³ Or they may combine large numbers of data points about workers’ personal lives and online behaviours to create new artificial groups not protected by the Equality Act.⁸⁴ For both practical and substantive reasons, therefore, equality law provides workers with only a limited means of challenging algorithmic management.

4.5 The law of unfair dismissal

For a privileged subset of individuals in the workforce, the law of unfair dismissal and the common law impose some obligations on employers regarding the use of algorithms to discipline or dismiss their staff. Employees possess the right not to be unfairly dismissed under the Employment Rights Act 1996,⁸⁵ which constrains the reasons why they can be dismissed and establishes principles of procedural fairness that employers must follow. The deployment of algorithmic management systems may sometimes breach the express or implied terms of an employees' contract, including the duty of trust and confidence owed by employers. In these circumstances, the employee could choose to resign and attempt to claim constructive unfair dismissal,⁸⁶ although this is often an uphill battle as the individual must demonstrate a repudiatory (i.e. very serious) breach of contract by the employer⁸⁷ – a high threshold to surpass.

One can divide the analysis into two parts: the substantive (the why) and the procedural (the how) of discipline and dismissal. Turning first to the reasons why employers are permitted to dismiss their employees, employers must ensure that any algorithmic disciplinary system respects the following:

- The need to avoid dismissals for reasons that are considered 'automatically unfair',⁸⁸ such as the employee's membership of a trade union or because they blew the whistle on their employer.
- The requirement to establish a single, 'potentially fair reason' for a dismissal from a specified list: conduct, capability, redundancy, to comply with an employer's statutory duty, or another substantial reason that could justify the decision.⁸⁹
- The principle that the reason why the employee was dismissed must be within the 'range of reasonable responses' open to the employer in the particular circumstances.⁹⁰

In some situations, compliance with these requirements may be straightforward, such as if the reason the individual was dismissed was based on that person being flagged by an algorithm over concerns about misconduct or poor performance. However, there are many situations where the lack of transparency about how algorithms make decisions and the complexity of the process by which the recommendation is reached makes it very difficult to identify a legitimate reason for a dismissal. This difficulty is only increased when one considers the wide array of data sets and metrics that algorithmic management structures are built upon: some may give evidence about a legitimate

concern (e.g. task performance) but others may be random or relate to entirely irrelevant matters.⁹¹ Reliance on customer ratings or evaluations is particularly troublesome in this regard, given that they incorporate customer biases⁹² and may be influenced by any number of factors not connected to the worker's performance.⁹³ The statutory regulation of dismissal must therefore shape the basis on which employers make those decisions in an era of algorithmic management.

The law of unfair dismissal offers stronger principles on the question of how employees should be dismissed, and seeks to guarantee procedural justice at this important moment in their working life. The extensive guidance on disciplinary dismissals (those connected to conduct or poor performance) issued by the Advisory, Conciliation and Arbitration Service must be complied with in most cases for a dismissal to be fair. Amongst other things, this requires the employer to carry out necessary investigations, to explain the issue to the employee and to consider their response, and to permit the employee an appeal.⁹⁴ An unreasonable failure to comply with the guidance can lead to an uplift in the level of compensation awarded.⁹⁵

When translated into the context of algorithmic management, these procedural requirements would require the employer to explain the precise issues raised by the system to the employee, which may be difficult if the system is complex and constantly changing. It would also require the employer to investigate the recommendation of the algorithm and substantiate it independently. Personal interaction and an individualised response to the employee, in the form of an initial meeting and a subsequent appeal meeting, appear to be essential, rendering fully automated dismissal decisions unlawful.⁹⁶

Given this, how are employers getting away with the unfairness we currently see? The answer lies in the most significant limitation that hinders the law of unfair dismissal in this context: its personal scope. Only those with 'employee' status, who work under a contract of service and meet a range of restrictive legal tests, benefit from the law of unfair dismissal. This category of individuals is more tightly constrained than those covered by collective labour law or non-discrimination protections. Furthermore, in most cases the right not to be unfairly dismissed does not apply until the employee has two years of qualifying service.⁹⁷ A significant proportion of the workforce therefore is not entitled to the rights and principles outlined here, allowing employers to continue to use tools that discipline and terminate their contracts with impunity.

5 rights at work in an age of algorithmic management: a new framework

We have so far seen that there are a broad range of existing legal frameworks that should guide and constrain algorithmic management practices in the UK, but that these are not capable of providing effective protection to workers. In addition to specific shortcomings with each of these legal frameworks, there are recurring problems when it comes to protecting workers from the detrimental impacts of algorithmic management. These include a lack of awareness or understanding of algorithmic systems and the legal regimes applicable to them, as well as barriers to accessing and enforcing legal rights. The tripartite nature of algorithmic management adds another layer of complexity, as it means employers may not always be the most appropriate target for regulation, and the fact that algorithmic systems are often developed outside the UK means they may not be designed for compliance with our regulatory and labour law frameworks.

A potential response to these issues would be to attempt to tweak existing legal safeguards, and to persuade courts to interpret current laws in a manner that better protects algorithmically managed workers. We make a number of suggestions in this vein, focussing on how the law on worker voice and consultation rights should be strengthened for the context of algorithmic management. Given the scale and nature of the challenge, however, we believe a more radical approach is required and so go on to set out a new set of proposals designed to secure workers' rights in the era of algorithmic management.

5.1 Ensuring worker voice

Establishing mechanisms for worker voice and agency over the use of algorithmic management should be among the first priorities of any regulatory approach. A key element of this will involve acting on the longstanding critiques that labour lawyers have made of the UK's current legal frameworks and removing the barriers to effective collective bargaining and industrial action. Among the necessary changes are the removal of overly burdensome notice, ballot-threshold and quorum

requirements for lawful industrial action, re-introducing a ban on using agency workers as strike-breakers, reversing the ban on 'secondary' action and the recently imposed minimum-service requirements, as well as repealing the interferences with trade-union autonomy introduced by the Trade Union Act 2016.

These general reforms would go a long way to improving worker voice and agency over algorithmic management. But there are also several more context-specific changes needed to ensure effective collective representation and bargaining over the adoption and implementation of algorithmic systems:

1. Require a 'technology representative' be appointed in every workplace, to ensure a vehicle for worker voice on these issues exists even in the absence of a trade-union presence.⁹⁸ These representatives should be appointed by the local branch of a recognised union or directly elected by workers where there is no recognised union.
2. Introduce mandatory collective bargaining and consultation rights prior to the introduction of algorithmic systems that will have a material impact on working conditions or managerial processes. This bargaining could occur on a site, enterprise or even sectoral basis, as appropriate. The use of algorithmic management should be expressly listed as a matter for industrial action and as a mandatory topic of collective bargaining under the statutory union-recognition procedure to bolster workers' collective voice in this area.
3. Establish more extensive transparency duties for employers, in the form of an algorithmic impact assessment, with an active role for workers and trade unions in supervising and auditing these. Extending beyond employers' existing obligations under data-protection and health and safety regulations, these recommendations draw inspiration from the draft EU Directive on Platform Workers but crucially provide a stronger role for trade unions and apply beyond those working via online platforms.⁹⁹ Employers should be required to provide workers and their union representatives with information about the purposes, internal functioning and impacts of any algorithmic system they are seeking to implement. At a minimum this should include:
 - a detailed breakdown of whether and how algorithmic management systems are being used in the workplace (fully automated or otherwise);

- the categories of data being collected and processed and the weighting or influence these each have on the systems outputs;
- how human oversight and review of these outputs is being implemented; and
- the expected impacts of the system on workers' conditions and human rights, along with the steps that have been taken to mitigate any risks or adverse impacts.

These impact assessments should be reviewed and updated on an annual basis unless agreed otherwise with a recognised union. In addition, workers and unions must have the right to feed into the impact assessments when they are being developed by the employer, and to undertake audits of the algorithmic systems if at any point they believe the information provided to them is inaccurate. Although extensive, this information is necessary to facilitate effective worker voice over algorithmic management. It will also help workers identify potential violations of their rights (e.g. if an algorithmic system is potentially discriminatory).¹⁰⁰

4. Finally, where algorithmic management systems are developed by third-party companies, some mechanism is needed for workers to exercise voice at the development phase. Where algorithmic systems are developed in-house, unions can bargain collectively over how they operate, but this is not possible if a system's internal processes are determined prior to it entering the workplace. One way of achieving this would be to give workers and unions a right to engage with developer companies at the point that they apply for a licence to sell or market algorithmic management systems in the UK, as we suggest should be required below. Trade unions with members who are likely to be managed by the tool should be involved in the licencing approval process, with a right to access information and audit the system and then raise any concerns they have with the regulator. Alternately, in the absence of a licencing system for algorithmic management, unions should have the right to audit and feed into impact assessments undertaken by the developers, and to be involved in any discussions between the developer and employer about customising or implementing the system.¹⁰¹

The proposed combination of technology representatives, collective consultation and bargaining rights, and extensive information requirements will allow workers to better understand and influence the use of algorithmic management systems. Giving workers greater say

and control over these potentially harmful management practices will also help them to secure decent conditions and protect human rights at work.

5.2 A new generation of rights for the era of algorithmic management

The above proposals will enable workers to better resist and challenge unfair algorithmic management practices. However, the significant gaps in union coverage and potential for employer intransigence during bargaining mean that workers' self-regulation of algorithmic management must be supplemented and underpinned by a floor of statutory rights protecting them against harmful uses and detrimental impacts of algorithmic management systems.

Rather than seeking to adapt existing legal frameworks such as unfair dismissal or data-protection rights to this new context, we recommend a fundamental shift in approach that would extend the scope of protection to a wider range of individuals and introduce new rights tailored to the specific challenges that they face at work. Here, we focus on three aspects of the framework that we propose.

Who should be protected?

One of the major barriers to securing fair treatment in relation to algorithmic management is that many of the groups most likely to be subject to these practices enjoy limited or even no employment rights. Entitlement to such rights depends on whether an individual can demonstrate they fall within the legal definitions of either 'employee' or 'worker' status.¹⁰² Those classed only as workers rather than employees are denied important protections, such as those against unfair dismissal and maternity and parental rights. This may be the case for many working in the gig-economy who are managed by algorithm for example, as the courts have so far only addressed the question of whether these individuals have worker rather than full employee status. Worse, some individuals subject to algorithmic management will even be excluded from worker status and therefore denied *all* employment rights. This can include those, such as agency workers, who do not have a direct contractual link with the organisation they work for. Or those who do not have an obligation to perform the work personally themselves, as required by the statutory definition of worker, because they have the

freedom to sub-contract the work or can send a substitute to complete it in their place. A further problem with the current status-based approach is that employers can use their superior bargaining position to dictate written contractual terms that wrongly portray an individual as self-employed. Although the law has adapted to these ‘sham self-employment’ arrangements by looking to the reality of the parties’ relationship rather than the written documentation, most notably in the recent Supreme Court decision in *Uber*,¹⁰³ the practice continues to make it difficult for individuals to understand and enforce the employment rights they are legally entitled to.

Rethinking worker protection for the era of algorithmic management provides a real opportunity to break away from the classifications of status that domestic employment law is currently founded upon. If our purpose is to ensure fair and decent treatment for all those whose working lives are governed by decisions, recommendations or processes resulting from algorithmic systems, then the rights necessary for achieving that aim must be available to that wider group of people. Any rights crafted in response to the problems arising from algorithmic management should therefore be extended to all those providing labour that is, or may be, subject to algorithmic management who are not genuinely running their own business enterprise, with a statutory presumption of coverage. This proposed approach is similar to the draft EU Platform Work Directive (PWD) which provides rights to those subject to algorithmic management independently of their employment status or relationship, although negotiations on the final text of the Directive are still ongoing.

What rights are necessary?

One can begin to construct a set of rights that would advance the aim of guaranteeing fair and decent treatment for working people in the face of these new challenges. We propose the following as central elements of a new regulatory approach to algorithmic management:

1. An overarching requirement that algorithmic management systems are only lawful if deployed in a manner consistent with workers’ human rights, meaning both those rights contained in the European Convention of Human Rights and the European Social Charter. This would explicitly recognise, for example, the rights to respect for private and family life and freedom of association and expression, as well as introduce a strong framework for protecting social rights such

as that to just conditions of work, to fair remuneration and to safe and healthy working conditions. Workers would have the right to bring tribunal claims challenging algorithmic systems or decisions that infringe their fundamental rights, with available remedies including compensation and/or orders for employers to change their practices.

2. A right not to be subject to some specific forms of algorithmic management practices that should be deemed 'automatically unfair'.¹⁰⁴ There are two dimension to our proposed category of automatically unfair uses of algorithmic management.
 - a. First, fully automated algorithmic decision-making should be prohibited in the context of particularly important or impactful workplace decisions. The effects of certain types of managerial decision on workers' lives are so significant that they should require human input and agency rather than being outsourced to algorithmic systems. A 'human in the loop' is therefore required in such cases,¹⁰⁵ with meaningful oversight and input. This must include a prohibition of automated decisions to terminate work,¹⁰⁶ but should also encompass any decision to initiate disciplinary action or procedures, and decisions that have a significant effect on working conditions or levels of remuneration.
 - b. Second, algorithmic systems should be prohibited as 'automatically unfair' where they rely on overly invasive monitoring or process types of data that are illegitimate grounds for making managerial decision-making. We suggest the guiding principle in determining which technologies fall into this category is whether they are manifestly disproportionate given their risks or harms to workers. Examples of management practices that should be prohibited as automatically unfair include:
 - the use of automated facial-recognition and neurological activity scanning software;
 - gathering data via the microchipping of workers;
 - the monitoring or processing of data relating to the physical or psychological state of workers;
 - the monitoring or processing of trade-union activities or communications, and
 - the monitoring or processing of purely private communications or activities of workers (whether in or outside the workplace).

There is an emerging consensus in favour of bans of this type, often known as ‘red lines’, which can be found in the draft Platform Work Directive and other international proposals to regulate algorithmic management technologies.¹⁰⁷ We suggest that UK legislators should, at a minimum, aim to keep pace with these international standards and developments and therefore create an open-ended list of ‘automatically unfair’ algorithmic management practices, subject to continual review and updates. Although this list will inevitably fail to keep up with employers’ practices, under the above proposal workers will also have the right to challenge algorithmic management systems on a case-by-case basis. Moreover, where a court or tribunal finds that an algorithmic management system infringes a workers’ human rights this should automatically trigger a government assessment of whether the technology should be added to the list of prohibited practices.

3. A right to have a human explain and undertake a review of any managerial decision that has impacted a worker or workers that was taken or supported by an algorithmic system. The explanation must be detailed enough to allow workers to understand and challenge the basis for the decision, by providing them with the data on which the decision was based and how this was used to come to the decision. The individual undertaking the review should also be required to consider any concerns or evidence the worker raises in objection to the original decision and have the authority to overturn it if necessary. This provision would go beyond the equivalent guarantee for platform workers contained in the current EU draft directive, which is limited to ‘significant’ decisions.¹⁰⁸

How should this framework be enforced?

Facilitating worker voice and co-regulation of algorithmic management will help with enforcement, as in many cases it will allow problems arising from the use of algorithmic systems to be identified and resolved without recourse to the legal system. Where this is not possible, however, individual workers must be able to bring claims and receive remedies such as compensation and injunctions following any breaches. The problems identified above with individual litigation as a means of enforcement indicate that trade unions and worker representatives must also be given the right to bring such claims on behalf of their members, and that the new rights proposed above should be enforceable through the employment-tribunal system rather than civil courts. However, these

traditional enforcement mechanisms of collective and legal action should be supplemented with two further innovations.

First, a specialist regulator should be created with standard-setting, auditing and monitoring powers. There is currently no unified regulator with responsibility for overseeing the use of technology in the employment context, nor is there a labour inspectorate or department capable of fulfilling this role.¹⁰⁹ This new body must have sufficient technical, legal and industrial-relations expertise to ensure all relevant legal standards are respected where algorithmic systems are deployed in relation to work. It should also have responsibility for introducing and overseeing a licensing regime for algorithmic management systems that are intended to be used or marketed in the UK. Companies developing these systems would not be able to sell or deploy them legally unless and until they can satisfy the regulator that it complies with all relevant legal rights and duties.¹¹⁰ As discussed above, trade unions should have an active role in this licencing process, with rights to access information and audit the systems. The risks and potential harms of algorithmic management justify imposing certification requirements on the sale and use of these systems in much the same manner as applies to medical devices. In addition to tribunal claims, workers and their representatives would be able to bring complaints to the regulator, who would be under a duty to undertake investigations and inspections and have the authority to issue compliance notices or sanctions.

Second, joint liability should be imposed on any company that develops or sells algorithmic management systems for employment law breaches that result from the operation of their systems.¹¹¹ This would include breaches of existing statutory rights as well as the new frameworks aimed at regulating algorithmic management proposed above. Liability would be strict, subject to a defence where the developer or supplier company can show it has taken all reasonable steps to prevent the breach from occurring.¹¹² Imposing joint liability down the algorithmic management supply chain in this way will ensure that all those involved in developing potentially harmful algorithmic systems have strong incentives to ensure their products comply with UK law.

In sum, we propose the introduction of a range of new rights and prohibitions. These provisions must be supported by a pluralistic approach to enforcement in order to ensure decent working conditions are achieved in the era of algorithmic management. Facilitating collective bargaining and worker voice over new workplace technologies is an

important part of this and should shift the emphasis towards non-legalistic dispute resolution mechanisms. However, there is also a need for new standards and legal rights that can be enforced by individuals or their representatives, and an independent and interventionist regulator to licence and oversee the use of algorithmic systems.

6 conclusion

The rapid development and adoption of algorithmic management systems amounts to an urgent threat to decent work for current and future generations of workers. Although developers and employers fail to respect the current regulatory framework in their design and deployment of these technologies, those frameworks suffer from severe deficiencies when applied to these complex and ever-evolving processes. Given this, we have proposed a substantial strengthening of collective voice and trade-union capacities in this arena, as well as a novel framework of rights and prohibitions that would be actionable by all individuals whose working lives have been influenced by algorithmic processes and complemented by the work of a specialist auditing and licensing body. Although extensive, the reforms set out here are necessary if we are to secure decent working conditions and workers' rights in the age of algorithmic management.

notes

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- 61 On this requirement see Article 29 Working Party, 'Guidelines on Automated Individual Decision-Making and Profiling for the Purposes of Regulation 2016/679' (2018) 20.
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- 75 Data Protection Act 2018, s 165(4); *R (Delo) v Wise Payments Ltd*, [2022] EWHC 3046 (Admin).
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- 77 *R (Coll) v Secretary of State for Justice*, [2017] UKSC 40. On the potential to expand the application of direct discrimination in cases of algorithmic discrimination see Jeremias Adams-Prassl, Reuben Binns, and Aislinn Kelly-Lyth, 'Directly Discriminatory Algorithms', *The Modern Law Review*, 86 (2023), 144–75.
- 78 Jeffrey Dastin (n 32).
- 79 Equality Act 2010, s 19.
- 80 Equality Act 2010, s 136; *Royal Mail Group Ltd v Efofi*, [2021] UKSC 33.
- 81 Ljupcho Grozdanovski, 'In Search of Effectiveness and Fairness in Proving Algorithmic Discrimination in EU Law', *Common Market Law Review*, 58 (2021).
- 82 Aislinn Kelly-Lyth, 'Algorithmic Discrimination at Work', *European Labour Law Journal*, 14 (2023), 152.
- 83 As defined in *Grainger plc v Nicholson* [2010] IRLR 4 (EAT).
- 84 For discussion of this new form of algorithmic discrimination see Sandra Wachter, 'The Theory of Artificial Immutability: Protecting Algorithmic Groups Under Anti-Discrimination Law', *Tulane Law Review*, 97 (2023).
- 85 Employment Rights Act 1996, s 94.
- 86 *ibid.*, s 95(2)(b).
- 87 *Western Excavating (ECC) Ltd v Sharp* [1978] QB 761, 769 (Lord Denning MR).
- 88 ERA 1996, s 98B-105.
- 89 ERA 1996, s 98(1)-(2).
- 90 *Iceland Frozen Foods Ltd v Jones*, [1982] IRLR 439, 442.
- 91 Philippa Collins, 'Automated Dismissal Decisions, Data Protection and the Law of Unfair Dismissal' (UK Labour Law Blog, 19 October 2021) <<https://uklabourlawblog.com/2021/10/19/automated-dismissal-decisions-data-protection-and-the-law-of-unfair-dismissal-by-philippa-collins/>>.
- 92 Alex Rosenblat and others, *Discriminating Tastes: Customer Ratings as Vehicles for Bias* (Data & Society, 2016).
- 93 Min Kyung Lee and others, 'Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers', in *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, (Association for Computing Machinery, 2015), pp. 1603.
- 94 Advisory, Conciliation and Arbitration Service, *Code of Practice on Disciplinary and Grievance Procedures* (ACAS, 2015). However compensation may be reduced, by up to 100 per cent, if the Tribunal finds the employee would have been dismissed even if the correct procedure had been followed, *Polkey v AE Dayton Services Ltd* [1987] UKHL 8.
- 95 TULRCA, s 207A.
- 96 Collins (n 92).
- 97 ERA 1996, s 108.
- 98 Joe Atkinson and Philippa Collins, 'Worker Voice and Algorithmic Management in Post-Brexit Britain' (n 39); Prospect, *Digital Technology: Guide for Union Reps*. (Prospect, 2021).
- 99 Platform Worker Directive, Articles 6-9. On similar lines see also Jeremias Adams-Prassl and others, 'Regulating Algorithmic Management: A Blueprint', *European Labour Law Journal*, 14 (2023), 124 (pp. 134–36).
- 100 Kelly-Lyth (n 82).
- 101 Adams-Prassl and others (n 100), p. 146.
- 102 See, for example, ERA 1996, s 230. 'Worker' status is used here to refer to the extended definition of employment sometimes known as 'limb-b worker' status, contained in ERA 1996, s 230(3)(b). For a comprehensive discussion of the law on employee and worker status see Simon Deakin and others, *Deakin and Morris' Labour Law* (Hart, 2021) ch 2.
- 103 *Uber BV v Aslam* [2021] UKSC 5; Joe Atkinson and Hitesh Dhorajiwala 'The future of employment: purposive interpretation and the role of contract after Uber', *The Modern Law Review* 85 (2022), 787. On the earlier development of this approach see *Autoclenz Ltd v Belcher* [2011] UKSC 41; Alan Bogg, 'Sham self-employment in the Supreme Court' *Industrial Law Journal* 41 (2012), 328.

- 104 This proposed category is analogous to the class of 'automatically unfair' reasons for dismissal which can never be justified.
- 105 Robin Allen and Dee Masters, *Technology Managing People – The Legal Implications* (TUC, 2021).
- 106 Adams-Prassl and others (n 100), pp. 140-42.
- 107 Platform Work Directive, Article 6 would ban monitoring of private conversations and those with worker representatives; the Californian 'Workplace Technology Accountability Act' would prohibit algorithmic systems being used to predict behaviour unrelated to essential work functions, California Bill AB-1651.
- 108 Platform Work Directive, Article 8.
- 109 The proposed regulator could either be an independent body or one element of a fully-fledged labour inspectorate were one to be introduced.
- 110 De Stefano (n 22). For discussion of this ex ante approach to AI regulation see Gianclaudio Malgieri and Frank A Pasquale, 'From Transparency to Justification: Toward Ex Ante Accountability for AI' (2022) *Brooklyn Law School Legal Studies Paper* No 712.
- 111 This proposal draws on analogous arguments in favour of joint liability in the context of other working arrangements where employers' functions are spread across multiple agents, see Guy Davidov, 'Joint Employer Status in Triangular Employment Relationships', *British Journal of Industrial Relations*, 42 (2004), 727.
- 112 As is the case for the defence to vicarious liability for discrimination law claims under Equality Act 2010, s 109. For the use of a similar model in data protection law see also UKGDPR, Article 82.

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Technology has revolutionised the way we work over the last 30 years, and is now changing radically the way in which working people are managed.

Rapid advances in 'artificial intelligence' have given rise to complex and powerful algorithmic management tools that pose an increasing threat to the right of workers to enjoy decent working conditions and exercise agency over their working lives.

Authors Joe Atkinson and Philippa Collins, experts in labour law, argue that existing worker protections, already hugely undermined by decades of anti-union legislation, are woefully inadequate to meet the challenges posed by these developments. They contend that a new regulatory framework is urgently needed, giving workers and their unions a genuine voice in the use of algorithmic management tools, alongside recognition and protection of their rights and access to justice that ensures their employers can be held to account.

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