

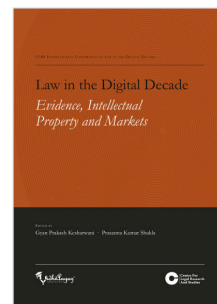
CHAPTER 15

The Invisible Employer: Algorithmic Management and the Reinvention of Control in the Gig Economy

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CHAPTER 15

The Invisible Employer: Algorithmic Management and the Reinvention of Control in the Gig Economy

CHANDRALEKHA

Every employment relationship in labour law has, until now, presupposed a visible employer — a person or entity capable of being identified, questioned, and held to account for the direction it exercises over a worker. The gig economy disturbs this premise. Platforms exercise the same functions traditionally associated with an employer — assigning work, setting pay, monitoring performance, and terminating access — not through a visible supervisor but through an algorithm whose rules the worker cannot see and cannot contest. This paper asks whether the traditional control test, built on the assumption of an identifiable, human directing mind, can meaningfully regulate a relationship in which the employer's authority has become functionally invisible, and if not, how the law should respond.

The paper adopts a doctrinal and comparative method. It examines how platforms use ratings, personalised pay, gamification and automated deactivation to manage workers in ride-hailing, delivery and freelance work, and places this alongside the legislative and ballot-driven contest over worker status in California under Assembly Bill 5 and Proposition 22, and the European Union's 2024 Platform Work Directive, which introduces a rebuttable presumption of employment triggered by defined indicators of algorithmic direction and control.

The paper argues that algorithmic management does not eliminate employer control but relocates and conceals it, replacing a visible supervisor with an opaque system that performs the same disciplinary function while evading the doctrinal tests designed to detect it. The paper concludes that the law and workers alike need better tools to hold the invisible employer to account, starting with meaningful access for workers to the criteria used to evaluate and pay them and human review of automated decisions with serious consequences, such as deactivation.

Keywords: Algorithmic Management; Gig Economy; Control Test; Employment Classification; Platform Work

1 INTRODUCTION

Most workers who have a boss can picture that boss: a supervisor who assigns shifts, checks in during the day, and decides whether a raise or a warning is deserved. Millions of gig workers today have no such person to picture. The driver for a ride-hailing app, the courier for a food-delivery platform, and the freelancer on an online marketplace are all managed, disciplined, and paid by software rather than by a human being who watches them work. This paper calls that software the *invisible employer*.

Scholars use the term *algorithmic management* to describe this system: the use of software algorithms to assign tasks, monitor performance, evaluate quality, set pay, and discipline or terminate workers, largely without direct human supervision.¹ Companies market this arrangement as “flexible” and “entrepreneurial,” since workers can log on and off whenever they like. Yet researchers who have studied these

¹ Alex Rosenblat & Luke Stark, Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers, 10 Int'l J. Comm. 3758, 3758–60 (2016).

platforms closely have found that algorithmic systems often exercise a form of control that is just as powerful as, and in some ways more invasive than, traditional supervision — it is simply harder to see.²

The stakes of understanding this shift are not merely academic. Tens of millions of people worldwide now earn some or all of their income through app-based platforms, and the number continues to grow as companies in retail, warehousing, and even office work experiment with similar tools. If algorithmic management really does function as a form of control comparable to traditional supervision, then treating platform workers as fully independent business owners — free of any employer at all — may rest on a legal fiction. Understanding exactly how the software controls workers is therefore a necessary first step before deciding how the law should respond.

This paper explains what algorithmic management is, traces how it grew out of older methods of workplace control, describes the specific tools platforms use to manage workers, illustrates those tools with examples from ride-hailing, delivery, and freelance platforms, and considers what this means for workers and for the law. Throughout, the goal is to make a complex and fast-moving academic literature accessible without oversimplifying the underlying research. The paper does not argue for a single legal fix; instead, it tries to show, clearly and with evidence, why the question of who — or what — is managing gig workers has become so difficult to answer.

2 WHAT IS ALGORITHMIC MANAGEMENT?

Algorithmic management refers to a bundle of practices in which data collection and computer algorithms replace many of the functions that a human manager used to perform.³ Instead of a supervisor assigning the next job, a dispatching algorithm decides which worker receives which task, based on location, rating, acceptance history, and other data points the worker usually cannot see. Instead of a manager observing performance, the platform tracks metrics such as speed, cancellation rates, and customer ratings, and feeds them into a score that determines future opportunities.

Four features distinguish algorithmic management from ordinary workplace software. First, it is *continuous*: data is collected on nearly every action a worker takes, not just at scheduled review periods. Second, it is *opaque*: the exact rules that translate data into rewards or penalties are rarely disclosed to workers, and platforms frequently change them without notice.⁴ Third, it is *adaptive*: the system can be tuned in real time for individual workers, meaning two people doing the same job may be paid or assigned differently based on hidden calculations. Fourth, it operates at a *scale* that no team of human managers could match, allowing a single platform to coordinate the work of millions of people simultaneously. Shoshana Zuboff has argued that this capacity to extract behavioral data and convert it into a tool of prediction and control is part of a broader economic logic she calls “surveillance capitalism,” in which human experience itself becomes raw material for profit.⁵

It is worth pausing on why the *combination* of these four features matters more than any single one of them. Employers have monitored workers for as long as employment has existed, and older technologies

² Katherine C. Kellogg, Melissa A. Valentine & Angèle Christin, Algorithms at Work: The New Contested Terrain of Control, 14 Acad. Mgmt. Annals 366, 366–70 (2020).

³ Kellogg, Valentine & Christin, *supra* note 2, at 371–75.

⁴ Alex J. Wood, Mark Graham, Vili Lehdonvirta & Isis Hjorth, Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy, 33 Work, Emp. & Soc’y 56, 57 (2019).

⁵ Shoshana Zuboff, The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power 201–05 (2019).

— time clocks, GPS trackers, call-center scripts — already automated pieces of supervision long before smartphone apps existed. What is genuinely new is the integration of monitoring, evaluation, task assignment, and pay-setting into a single, centrally designed system that touches almost every part of a worker’s day and that can be updated instantly and silently by the company that owns it. It is this combination — not surveillance alone, and not automation alone — that researchers have in mind when they describe algorithmic management as a genuinely new “terrain of control.”⁶

3 FROM THE FOREMAN TO THE ALGORITHM: A SHORT HISTORY OF WORKPLACE CONTROL

Employers have always looked for ways to manage labor efficiently. In the early twentieth century, scientific management (“Taylorism”) broke jobs into small, measurable tasks that a foreman could time and inspect. Later in the century, bureaucratic organizations relied on written rules, job descriptions, and layers of middle management to standardize behavior across large workforces. What changed with the rise of digital platforms was not the desire to control labor, but the *tool* used to do it. Ride-hailing and delivery platforms replaced the foreman’s stopwatch and the manager’s rulebook with a smartphone app that watches, scores, and instructs the worker directly.⁷

Researchers Katherine Kellogg, Melissa Valentine, and Angèle Christin describe this as a shift to “algorithms at work” that perform six management functions once handled by people: restricting, recommending, recording, rating, replacing, and rewarding workers.⁸ What makes this shift significant is not merely technical. Because the algorithm is embedded in the app that workers must use to find and complete jobs, it can enforce compliance instantly and automatically, without the delays, negotiations, or discretion that came with a human supervisor.

4 THE TOOLKIT OF INVISIBLE CONTROL

Although platforms differ, most rely on a similar set of tools to manage their workforce. Understanding these tools helps explain why algorithmic management feels different from ordinary employment, even though the underlying goal — getting work done efficiently and cheaply — is not new.

4.1 Ratings and Reputation Scores

Customer ratings, often on a five-point scale, are aggregated into a worker’s overall score. Workers who fall below a threshold can be suspended or permanently removed from the platform (“deactivated”), frequently without a clear explanation or a meaningful appeal process. Hatim Rahman’s research on a freelance labour platform found that because the criteria behind these scores were kept opaque and changed without warning, workers experienced what he calls an “invisible cage”: they felt controlled by the evaluation system yet could not figure out how to align their behaviour with its shifting standards.⁹ Some workers responded by obsessively experimenting with their profiles and work habits to try to improve their scores; others, especially those less dependent on the platform for income, simply gave up

⁶ Kellogg, Valentine & Christin, *supra* note 2, at 366–68.

⁷ Rosenblat & Stark, *supra* note 1, at 3761–63.

⁸ Kellogg, Valentine & Christin, *supra* note 2, at 376–80.

⁹ Hatim A. Rahman, *The Invisible Cage: Workers’ Reactivity to Opaque Algorithmic Evaluations*, 66 Admin. Sci. Q. 945, 946–48 (2021).

trying to influence a system they could not understand.¹⁰ In a later book-length study, Rahman shows that this dynamic persists even among highly skilled, in-demand freelancers, suggesting that opacity — not just a lack of bargaining power — is doing much of the controlling work.¹¹

4.2 Personalized and Dynamic Pay

Rather than paying every worker the same rate for the same task, many platforms calculate pay individually, using data about each worker's history, location, and even how likely that worker is to accept or reject a given offer. Legal scholar Veena Dubal calls this practice “algorithmic wage discrimination”: workers performing identical labour may be paid different amounts based on opaque, constantly shifting formulas designed to keep them working just long enough to hit a target.¹² Drivers Dubal interviewed compared the experience to gambling, describing a system of intermittent bonuses and unpredictable fares that resembles a slot machine more than a paycheck.¹³ Because the formulas are proprietary, workers cannot verify whether the pay they receive is fair, and they cannot easily compare their pay to that of coworkers doing the same job.¹⁴

4.3 Gamification and Behavioral Nudges

Platforms frequently use game-like features — badges, streaks, progress bars, and surge-pricing alerts — to encourage workers to keep working during periods of high demand or to accept less desirable jobs. Mareike Möhlmann and Lior Zalmanson's study of Uber drivers found that such nudges created real tension: drivers felt pressure to follow the platform's suggestions even when they were not required to, because ignoring them seemed to lower future earning opportunities.¹⁵ In response, drivers developed their own countertactics, such as coordinating mass log-offs to trigger surge pricing, illustrating that algorithmic control, however powerful, is not absolute; workers routinely find ways to “game” the very systems built to manage them.¹⁶

4.4 Automated Discipline and the Absent Manager

Perhaps the starkest feature of algorithmic management is automated deactivation: a worker can lose access to a platform, and therefore to their income, through an automated decision with little or no human review. Because there is no manager to appeal to in person, workers often describe the experience of being disciplined by an algorithm as uniquely disorienting — there is no one to argue with, and no clear standard to point to in one's defence.¹⁷

¹⁰ Id. at 949–52.

¹¹ Hatim A. Rahman, *Inside the Invisible Cage: How Algorithms Control Workers* 12–18 (2024).

¹² Veena Dubal, *On Algorithmic Wage Discrimination*, 123 *Colum. L. Rev.* 1929, 1934–38 (2023).

¹³ Id. at 1961–64.

¹⁴ Id. at 1965–68.

¹⁵ Mareike Möhlmann & Lior Zalmanson, *Hands on the Wheel: Navigating Algorithmic Management and Uber Drivers' Autonomy*, in *Proceedings of the 2017 International Conference on Information Systems (ICIS)* 1, 5–7 (2017).

¹⁶ Wood, Graham, Lehdonvirta & Hjorth, *supra* note 4, at 62–65.

¹⁷ Kellogg, Valentine & Christin, *supra* note 2, at 381–85.

5 CASE ILLUSTRATIONS ACROSS THE GIG ECONOMY

Ride-hailing is the most studied example. Rosenblat and Stark's nine-month study of Uber drivers found that although the company promoted an image of driver independence, its app exercised substantial indirect control — through suggested routes, performance messages, and rating thresholds — that shaped driver behaviour nearly as much as direct instruction would.¹⁸ Drivers described receiving automated messages that read like gentle suggestions (“consider driving toward downtown”), but that functioned, in practice, as instructions, because ignoring them too often could mean fewer profitable ride offers in the future.¹⁹

Food-delivery platforms display a closely related pattern, with an added layer of physical risk. Couriers are typically paid per completed delivery rather than by the hour, and the algorithm that assigns orders can reward speed by offering more or better-paying jobs to couriers who accept quickly and complete deliveries fast. Because the same system that assigns work also tracks lateness and cancellations, couriers report feeling pressure to keep moving even in poor weather or unsafe traffic conditions, since slowing down risks a lower rating and, in turn, fewer future orders — the same rating-driven mechanism described among ride-hailing drivers, applied to workers who are also navigating city streets on bicycles or scooters.²⁰

Remote “click-work” and freelance platforms show that algorithmic management is not limited to app-based transportation or delivery. A large cross-country study of remote gig workers by Alex Wood, Mark Graham, Vili Lehdonvirta, and Isis Hjorth found that algorithmic control was central to how online labour platforms operated worldwide, even though workers reported high levels of flexibility and autonomy in choosing tasks. The same features that produced flexibility — constant availability of new work, and rating-driven access to future jobs — also drove overwork, irregular hours, and social isolation.²¹ The same team's related work on “embeddedness” found that remote gig workers often lacked the social and institutional supports — unions, local labour law protections, informal peer networks — that traditionally cushioned workers against employer power, leaving the platform's algorithm as one of the only consistent forces shaping their work lives.²²

High-skilled freelance platforms complicate the assumption that algorithmic management only affects low-wage workers. Rahman's research on a professional freelance marketplace found that even highly educated, in-demand workers experienced the same disorientation from opaque rating criteria as workers in lower-skill gig jobs, suggesting that the structure of the platform — not the skill level of the worker — is what produces the “invisible cage.”²³

¹⁸ Rosenblat & Stark, *supra* note 1, at 3770–72.

¹⁹ Rosenblat & Stark, *supra* note 1, at 3763–65.

²⁰ Kellogg, Valentine & Christin, *supra* note 2, at 378–80.

²¹ Wood, Graham, Lehdonvirta & Hjorth, *supra* note 4, at 58–61.

²² Alex J. Wood, Mark Graham, Vili Lehdonvirta & Isis Hjorth, *Networked but Commodified: The (Dis)Embeddedness of Digital Labour in the Gig Economy*, 53 *Sociology* 931, 935–40 (2019).

²³ Rahman, *supra* note 9, at 953–58.

6 CONSEQUENCES FOR WORKERS

The consequences of algorithmic management fall into three broad categories: an autonomy paradox, economic insecurity, and weakened collective power. Each is worth examining in turn, because each points toward a different kind of remedy.

First, there is what researchers call the *autonomy paradox*: platforms advertise freedom and flexibility, yet the same systems that grant workers the freedom to log on whenever they like also quietly steer, rank, and discipline them. Workers often experience this as freedom *with strings attached* — they can say no to a task, but saying no too often can quietly lower their future earnings or standing.²⁴

Second, opaque evaluation and pay systems create economic insecurity. Because workers cannot verify how their pay or their rating is calculated, they cannot reliably predict their income or plan their finances, a problem Dubal documents in detail through interviews describing the psychological toll of what drivers call a “casino” style of pay.²⁵ This unpredictability is compounded by the fact that legal protections designed for traditional employees — minimum wage guarantees, unemployment insurance, protection from arbitrary firing — generally do not apply to workers classified as independent contractors.²⁶

Third, algorithmic opacity undermines workers’ ability to organize collectively or seek redress. When workers cannot identify why they were paid a certain amount or deactivated from a platform, they struggle to build the kind of shared, verifiable grievances that have historically fueled labor organizing.²⁷ If two drivers cannot easily confirm that they were paid differently for comparable trips, it becomes far harder to prove a pattern of unfair treatment, let alone to bargain collectively over it. Individualized, opaque pay formulas thus do more than confuse individual workers — they can quietly weaken the shared information that collective action has traditionally depended on.²⁸

There is also a less-studied but increasingly documented psychological dimension to these consequences. Workers describe a persistent, low-grade anxiety about being watched and scored at all times, along with genuine confusion about whether a bad day, a difficult customer, or simple bad luck will translate into a lasting mark against them. Rahman’s interviews capture this directly: workers who had experienced a sudden, unexplained drop in their rating described ongoing worry about when — or whether — it might happen again, even after their scores recovered.²⁹ This kind of chronic uncertainty, produced not by the difficulty of the work itself but by not knowing the rules that govern it, is one of the clearest ways in which algorithmic management differs in character from traditional supervision, however imperfect that older system may also have been.

7 LEGAL AND POLICY RESPONSES

Legal systems have begun to grapple with algorithmic management, primarily through the lens of worker classification and, more recently, through direct regulation of algorithmic pay and evaluation practices.

²⁴ Dubal, *supra* note 12, at 1944–52.

²⁵ Dubal, *supra* note 12, at 1961–64.

²⁶ Veena B. Dubal, Wage Slave or Entrepreneur?: Contesting the Dualism of Legal Worker Identities, 105 Calif. L. Rev. 65, 68–72 (2017).

²⁷ Dubal, *supra* note 26, at 101–06.

²⁸ Dubal, *supra* note 12, at 1970–75.

²⁹ Rahman, *supra* note 9, at 949–52.

Two distinct strategies have emerged: reclassifying workers so that existing employment law applies to them, and writing new rules that target algorithmic management directly, regardless of how a worker is classified.

In the United States, the central legal battle has been over whether gig workers are “employees,” entitled to protections such as minimum wage and overtime, or “independent contractors,” who are not. Veena Dubal’s scholarship on this dualism was cited by the California Supreme Court in *Dynamex Operations West, Inc. v. Superior Court*, which adopted a stricter “ABC test” presuming that most workers are employees unless the hiring company proves otherwise.³⁰ The California legislature soon codified this standard in Assembly Bill 5, but voters later approved Proposition 22, which carved out an exemption for app-based drivers, allowing companies to continue classifying them as independent contractors while offering certain limited benefits.³¹ Dubal has argued that this compromise effectively legalized algorithmic wage discrimination by allowing companies to set individualized pay without the transparency obligations that would apply to a traditional wage system.³²

The European Union has taken a more direct regulatory approach. The Platform Work Directive, adopted in 2024, requires platforms to disclose the parameters used in automated monitoring and decision-making systems, prohibits certain forms of automated dismissal without human review, and creates a rebuttable presumption of employment status for platform workers who meet specified criteria.³³ Scholars view this as one of the first serious legislative attempts to regulate algorithmic management directly, rather than relying solely on older employment-classification doctrines.³⁴

Beyond formal law, some scholars argue that transparency requirements alone will not solve the deeper problem, because even a fully disclosed algorithm can still concentrate enormous power in the hands of a platform that controls the data.³⁵ Others emphasize that workplace algorithms are not neutral technical artifacts but embody specific managerial choices, meaning that meaningful reform will likely require worker input into how these systems are designed, not merely after-the-fact disclosure of how they operate.³⁶

These two strategies — classification and direct regulation — are not mutually exclusive, and several jurisdictions are now experimenting with both at once. Reclassification extends an existing, well-understood body of protections to platform workers, but it does so at the cost of long, uncertain litigation and the risk that companies will simply restructure their businesses to avoid the new rules, as some argue happened with Proposition 22. Direct regulation of algorithmic management, by contrast, can reach workers regardless of how they are classified, but it requires regulators to understand technical systems that companies have strong incentives to keep opaque. The Platform Work Directive’s requirement that companies disclose the logic behind automated decisions is, in this sense, a test of whether legal transparency mandates can meaningfully open up what has so far been a genuinely invisible process.³⁷

³⁰ *Dynamex Operations W., Inc. v. Superior Court*, 416 P.3d 1 (Cal. 2018); see also Dubal, *supra* note 26, at 72 (identifying the “ABC test” later adopted by the California Supreme Court).

³¹ Cal. Assemb. B. 5, 2019–2020 Leg., Reg. Sess. (Cal. 2019) (codifying the ABC test); Cal. Prop. 22 (2020) (exempting app-based drivers from AB 5’s employee classification).

³² Dubal, *supra* note 12, at 1985–90.

³³ Directive 2024/2831, of the European Parliament and of the Council of 23 October 2024 on Improving Working Conditions in Platform Work, 2024 O.J. (L) 2831.

³⁴ Rahman, *supra* note 11, at 190–97.

³⁵ Zuboff, *supra* note 5, at 8–12, 351–56.

³⁶ Kellogg, Valentine & Christin, *supra* note 2, at 390–95.

³⁷ Directive 2024/2831, *supra* note 33.

8 CONCLUSION

Algorithmic management has not eliminated the employer — it has made the employer harder to see. The dispatching algorithm, the rating system, and the dynamic pay formula now perform many of the functions once carried out by a human supervisor, but they do so with less transparency, less accountability, and, in many legal systems, less regulation. The research reviewed in this paper shows a consistent pattern: platforms offer workers real flexibility and autonomy, but they pair that flexibility with opaque, constantly shifting systems of evaluation and pay that function as a genuine, if invisible, form of workplace control.

As algorithmic management spreads beyond ride-hailing and delivery into warehousing, retail, and even white-collar work, the questions raised by this research become more urgent. Whether the answer lies in reclassifying workers as employees, mandating algorithmic transparency, giving workers a genuine voice in how these systems are designed, or rethinking labour law altogether, one conclusion is hard to avoid: an employer that cannot be seen is still an employer, and the law and workers alike will need better tools to hold it to account.

The literature reviewed here suggests three practical starting points for that project. First, workers need meaningful access to the criteria used to evaluate and pay them, not merely a general assurance that an algorithm is being used fairly. Second, automated decisions with serious consequences — deactivation chief among them — should be subject to some form of human review before they take effect, not only after a worker has already lost income or access to a platform. Third, because individual workers rarely have the resources to challenge an opaque system on their own, researchers, regulators, and worker organizations will likely need to keep collecting the kind of empirical evidence this paper has drawn on, so that the invisible employer can be studied, understood, and, where necessary, held accountable, one dataset at a time.

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