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Algorithmic Personalized Wages

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Algorithmic Personalized Wages

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Abstract

The paper explores algorithmically created personalized wages: what they are, what they mean, and what we can do about them. First, it establishes a taxonomy of five different forms of algorithmic wage differentiation: productivity-based wage adjustments, wages shifted through incentive bonuses and demerits, behavioral wages, dynamic wages, and wages shifted to conduct an experiment. It argues that these techniques are likely to spread from gig work to the formal employment context.

Second, it argues that the spread of these techniques has democratic implications. They will increase economic and racial inequality. They will harm labor solidarity. Perhaps most importantly, they put workers in a profoundly humiliating position in relationship to their boss, one where speech and autonomy are discouraged because they can lead to lowered pay.

Finally, it argues that we should understand these developments as innovations in power and domination and use old antimonopoly strategies as ways to limit the democratic downsides of these tools. We should explore bans or limits on first degree labor pricing discrimination and enhanced antitrust enforcement.

I. Introduction

Targeted, personalized content, where platforms serve people different content based on algorithmic decisions about what is most likely to keep them engaged, is now the default business model for social media. Targeted, personalized prices for consumer products, where sellers charge buyers pay different amounts based on algorithmic decision-making about what they will pay, is a growing phenomenon. This paper looks at the natural next

step: targeted, personalized wages for workers, in which employers pay employees different amounts based on algorithmic decision-making.

“Does Anyone Know What Paper Towels Should Cost?” asked a recent headline in the New York Times.¹ The article described how prices for basic physical goods were increasingly obscured by sellers, who use complicated pricing algorithms to determine—and then constantly update—the price at which any given product should be listed. The price of paper towels, once clearly marked with a number at the grocery store, is now different on different days, even at different hours, and may be different based on the browsing history of who is doing the buying.

For many workers, a variation on this question is increasingly part of the job: What *is* my salary? For many gig workers, such as for-hire drivers and delivery workers, wages are in flux and different people can be paid different amounts for the same task. A recent report by Dara Kerr from The Markup described how Uber driver pay is a black box. Drivers who were previously able to calculate how much they would be paid for a given ride based on distance and time, no longer can do so because their pay is determined by a complicated algorithm to which they have no access.² The pay structure, hidden behind a black box, appears to be a combination of several different factors: data-rich driver profiles that target the wage to match the incentives of the driver, dynamic (demand-driven) wages, the gamification of work, experimentation, and payment that tracks tasks, not presence and willingness to work.

This paper argues that this kind black box wage pricing—algorithmically personalized pricing—is on the verge of spreading into workplaces of large employers. Wage scales with set pay grades, which were the norm for blue collar jobs, may be on the decline. The techniques that are used to extract the maximal gig workers productivity for minimal pay, can, using contract, be imported to the formal employment space.³ In short, the Uber drivers’ experiences should be understood not as a unique feature of contract work, but as a preview of a new form of wage setting for large employers: individualized pay, schedules, benefits, and individualized behaviorally based incentive structures.

I lay out a schema to categorize five different mechanisms that can undergird these personalized wages. First, there is the extreme Taylorism enabled by surveillance technologies, where individuals’ productivity is tracked down to the minute. Second, there is a growing use of games and behavioral tools, with rewards that shift wages, to nudge productivity. Third, there is behavioral labor pricing, where the wage an individual gets is unrelated to their productivity but tied to characteristics about them gathered through on- and off-site surveillance. Fourth, there is dynamic pricing, where the wage a person changes based on demand. Finally, there are experiments, where the employer detaches price and productivity to test incentives and responses. The paper is necessarily speculative because so much of labor pricing is in a black

¹ Daisuke_Wakabayashi, *Does Anyone Know What Paper Towels Should Cost?* (New York Times, February 26, 2022) <https://www.nytimes.com/2022/02/26/technology/amazon-price-swings-shopping.html>.

² Dara Kerr, *Secretive Algorithm Will Now Determine Uber Driver Pay in Many Cities*, The Markup (March 1, 2022).

³ See Aloisi, Antonio and De Stefano, Valerio, [Your Boss Is an Algorithm. Artificial Intelligence. Platform Work and Labour](#) (July 14, 2022).

box. We don't know how warehouse or trucking or call service employers calculate and vary pay. However, the speculation is grounded in experience from gig work and the fact that employers have both opportunity and incentive to use these techniques.

The consequences for workers and for society are potentially profound. Companies using these techniques extract more value from workers for less, increasing inequality, depressing wages, and exacerbating racial inequality. Personalized wages also threaten to break solidarity and interrupt the possibility of public life. Ubiquitous surveillance, uncertainty, experimentation, personalization, and political surveillance all undermine dignity, autonomy, equality, and political freedom.

Targeted ads—and their accompanying dangerous effects—caught society by surprise. We should not allow algorithmically targeted wages, which are the labor version of targeted ads, to do the same.

By laying out the elements of surveillance wages and raising questions about the democratic implications, this Paper contributes to a growing field that is focused on the intersection of algorithms, monopoly, and labor.⁴ It builds on path-breaking research into the monopsony power of big corporations, and how such monopsony power drives down wages,⁵ as well as the growing literature on first degree price discrimination for consumer goods.⁶ It builds on the work

⁴ There is a substantial body of legal literature on the challenge of the use of big data in the hiring process, primarily focused on the discriminatory impacts, the role that proxies play, and algorithmic hiring. While This paper complements that research but is much more focused on the impacts of surveillance and personalization at work, on the human subject, as opposed to the filters for getting jobs. See Ifeoma Ajunwa, *The Paradox of Automation as Anti-Bias Intervention*, 41 *Cardozo L. Rev.* 1671 (2020), <http://cardozolawreview.com/the-paradox-of-automation-as-anti-bias-intervention/>; Nathan Newman, *UnMarginalizing Workers: How Big Data Drives Lower Wages and How Reframing Labor Law Can Restore Information Equality in the Workplace*, New York University Information Law Institute (Aug. 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2819142; Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 *Cal. L. Rev.* 671 (2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2477899.

⁵ Suresh Naidu, Eric Posner, and Glen Weyl, *More and More Companies Have Monopoly Power Over Workers' Wages. That's Killing the Economy*, Vox.com (Apr. 6, 2018), <https://www.vox.com/the-big-idea/2018/4/6/17204808/wages-employers-workers-monopsony-growth-stagnation-inequality>; Alan B. Krueger & Eric A. Posner, *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*, The Hamilton Project, (Feb. 2018), https://www.hamiltonproject.org/assets/files/protecting_low_income_workers_from_monopsony_collusion_krueger_posner_pp.pdf.

⁶ See, e.g., Ariel Ezrachi & Maurice Stucke, *Virtual Competition* (2016); Oren Bar-Gill, *Algorithmic Price Discrimination When Demand is a Function of Both Preferences and (Mis)perceptions*, 86 *U. Chi. L. Rev.* 217 (2019); Inge Graef, *Algorithms and Fairness: What Role for Competition Law in Targeting Price Discrimination Towards End Consumers?*, 24 *Colum. J. Eur. L.* 541 (2017); Akiva Miller, *What Do We Worry About When We Worry About Price Discrimination? The Law and Ethics of Using Personal Information for Pricing*, 19 *J. Tech. L. & Pol'y* 41 (2014); Christopher Townley, Eric Morrison & Karen Yeung, *Big Data and Personalized Price Discrimination in EU Competition Law*, 36 *Y.B. Eur. L.* 683 (2017); Gerhard Wagner & Horst Eidenmuller, *Down by Algorithms? Siphoning Rents, Exploiting Biases, and Shaping Preferences: Regulating the Dark Side of Personalized Transactions*, 86 *U. Chi. L. Rev.* 581 (2019); *Algorithmic Personalized Pricing*, 17 *N.Y.U. J.L. & Business* 1, 3 (2020); Ramsi A. Woodcock, *Dynamic Pricing as Monopolization*, 105 *IOWA LAW REVIEW* (2019).

of Frank Pasquale in showing how the lack of transparency is at the heart of the challenges of the new digital economy.⁷

But the most important argument of the article is not about what is happening, but how we should understand it, and how we should respond. Worker surveillance and individualized algorithmic wages represents a power distortion that should be met with a power corrective. In the last part of this paper, I argue that we can draw on old anti-discrimination principles within antimonopoly law to push to ban or severely constrain algorithmically determined personal wages. Price discrimination is an old antimonopoly problem, and new forms of price discrimination can be answered with old antimonopoly solutions.

The paper proceeds as follows. In the first part, I give some background on price differentiation, and then in Part II lay out the taxonomy of discriminations. The next two parts look at the democratic implications and lay out a way of thinking about antimonopoly solutions.

II. Price Differentiation and Algorithms

Price differentiation exists when the same person pays a different amount for the same product, even if the input costs are the same. Price discrimination is generally thought about in three categories: third- second- and first- degree price discrimination.⁸ In third degree price discrimination, buyers are categorized by certain traits—like age, or being college students—and prices are different depending on the category. Over 65 Americans get cheaper museum tickets; students get movie discounts. With second-degree price discrimination, the seller creates discounts for bulk buying or buying under conditions favorable to the seller. The purchaser can then opt-in to using the lower prices, but only by satisfying the condition required by the seller.⁹

First degree price discrimination exists when a seller sells at prices that are unique to each individual purchaser, presumably aiming for the highest price at which a buyer is willing to pay. In theory, then, the seller reaps all the potential capturable profits for each individual buyer. As described in a recent casebook, “Under it a seller sells every unit at that customer’s reservation price, or the highest price that customer is willing to pay. The result is that output is restored to the competitive level, but all the industry profits go to producers rather than consumers.”¹⁰ Traditional examples would be bazaar-haggled prices, car prices that go through several rounds

⁷ Frank Pasquale, *Black Box Society: The Secret Algorithms that Control our Economy* (Harvard University Press, 2016)

⁸ Arthur C. Pigou, *ECONOMICS OF WELFARE II* (4th Ed. 1932); Ida M. Tarbell, *THE HISTORY OF THE STANDARD OIL COMPANY* 31-64 (104); Christopher Leslie, *Revisiting the Revisionist History of Standard Oil*, 85 S. CAL. L. REV. 573 (2012)

⁹ See Alessandro Acquisti, Curtis Taylor, and Liad Wagman, *The Economics of Privacy*, 54 J Econ Lit 442, 466 (2016).

¹⁰ Hovenkamp et al. *infra* note 22.

of dealer and buyer negotiations, and scalped ticket sales. Modern examples include the evidence that online sellers are using consumer information to tailor pricing.¹¹

Market power is always part of the story when persistent price discrimination exists.¹² As the Hovenkamp antitrust casebook declares, “In a state of perfect competition, all sales will be made at economic cost, and a disfavored seller (one asked to pay more than cost) will simply buy from someone else.” Persistent price discrimination, therefore, is a sign of some dominance in the market. In the absence of such market power, buyer X, who is charged \$10 for toothpaste, would simply buy from buyer Y, who is charged \$9 for the same toothpaste, and the arbitrage would lead to buyer Y getting two tubes, selling to buyer X for anything less than \$10 and the price discrimination regime collapsing. Without market power, and with sufficiently low transaction costs, price discrimination should lead to this kind of arbitrage, where the purchaser with a preferable price resells to the purchaser with the higher price.

Price differentiation of all forms—including at least some first-degree price discrimination, and a great deal of dynamic pricing—has moved from abstraction to reality throughout the economy in the last twenty years.¹³ Both first degree price discrimination and dynamic pricing have led to calls for limiting or banning or limiting the practice.¹⁴

In the last decade, reports of price discrimination have been quickly rising.¹⁵ For years, economists recognized third- and second- degree price discrimination but argued that first degree price discrimination simply didn’t exist.¹⁶ Others recognized the potential, albeit latent, given new technologies. However, the capacity to collect massive amounts of information that can inform personalized pricing, along with the capacity to deliver pricing via online shopping, has changed that.¹⁷ The consensus that some first degree price discrimination exists, it isn’t totally clear how much, and it is likely to grow—how much is still a matter of contention.¹⁸

Sophisticated tools for collecting and interpreting individualized data means that the degree of market power that a firm must have to engage in price discrimination is reduced, because the

¹¹ Bar Gill, *supra* note 6.

¹² See Thomas E. Sullivan, Herbert Hovenkamp, Howard Shelanski, and Christopher R. Leslie, Chapter 8: Secondary-Line Differential Pricing and the Robinson-Patman Act (September 1, 2013). E. Thomas Sullivan, Herbert Hovenkamp, Howard A. Shelanski, and Christopher R. Leslie, *ANTITRUST LAW, POLICY AND PROCEDURE: CASES, MATERIALS, PROBLEMS* (7th ed. 2013); Diane and Curtis Eaton, *MICROECONOMICS* 303 (1988).

¹³ While the trend is recent, predictions of the trend have been around for two decades. Matthew Edwards, *Price and Prejudice: The case against Consumer Equality in the Information Age*, 10 *Lewis & Clark L. Rev.* 559 (2006); Boyle *supra* note 9. Mark Clock, *Unconscionability and Price Discrimination*, 69 *Tenn. L. Rev.* 317 (2002)

¹⁴ See Bar-Gill, Oren (2019) "Algorithmic Price Discrimination When Demand Is a Function of Both Preferences and (Mis)perceptions," 86 *University of Chicago Law Review*. Issue 2, Article 12. (2019).

¹⁵ Choe, Chongwoo and Matsushima, Noriaki and Tremblay, Mark J., Behavior-Based Personalized Pricing: When Firms Can Share Customer Information (March 30, 2020). ISER DP No. 1083, 2020, Available at SSRN: <https://ssrn.com/abstract=3564762> or <http://dx.doi.org/10.2139/ssrn.3564762>

¹⁶ See Hovenkamp, *supra* note 22, at 769 (“it never exists in the real world but is a good tool for analysis.”)

¹⁷ Ramsi Woodcock, *Personalized Pricing as Monopolization*, 51 *CONN. L. REV.* 311 (2019)

¹⁸ See Ariel Ezrachi, Maurice Stucke, *Virtual Competition: The promise and perils of the algorithm-driven economy* (2016); Maurice Stucke and Allen Grune, *Big Data and Competition Policy* 310 (2016).

ability to detect, whether precisely or crudely, the price point at which an individual will purchase, is greatly expanded.¹⁹ The ability to practically administer price discrimination at the consumer level, let alone the retailer level, is made much easier by digital sales. Imagine a 20th century department store; the firm might understand Joan is far more likely to make impulse purchases and therefore has a higher price point than Alisha, but as a practical matter the only way to deliver the personalized pricing to Joan would be to send Alisha a coupon in the mail. The posted price of \$100 for the striped shirt would be constant for all except the six buyers in Alisha's shoes who got the mailer. Now, instantaneous discounts targeted to individuals in physical retail, along with ubiquitous online shopping, means that the delivery mechanism for personalized pricing is much easier.

First degree price discrimination does not merely result from market power, it can help maintain it, and combined with sophisticated price monitoring tools, can enable the maintenance of power by competitors who algorithmically collude through monitoring and matching.²⁰

One form of price differentiation is dynamic pricing, where prices change based on demand. While it has always been possible, real-time process of data and powerfully algorithmic tools have made it far more prevalent.²¹ For instance, when Disney World increases its prices with increased demand on a regular basis, moving up and down depending on how many people want the tickets, that constitutes dynamic pricing.

The finance and travel industries have both been using dynamic pricing for many years. In finance, trades are directed by complex mathematical models using changing information to make millions of decisions. In travel, the changing cost of a ticket, based on demand, was one of the first experiences of dynamic pricing for most people. But starting a decade ago, these tools began migrating into consumer goods, both online and offline. Vending machines change price based on outside temperature. And off-the-shelf software tools are sold to retailers to help them optimize the profit on a single sale.²²

As a consumer, you might not know whether your particular price is standard, or an algorithmic pricing that includes the inputs demand and behavioral characteristics or may be part of an experiment.²³ Instead, people just perceive a general lack of stability and clarity. Pricing is

¹⁹ See Akiva A. Miller, *What Do We Worry About When We Worry About Price Discrimination? The Law and Ethics of Using Personal Information for Pricing*, 19 J. Tech. L. & Pol'y 41, 44-54 (2014).

²⁰ Salil K. Mehra, *Price Discrimination-Driven Algorithmic Collusion: Platforms for Durable Cartels*, 26 Stan. J.L. Bus. & Fin. 171, 173 (2021).

²¹ If is also a subset of differential pricing, where the seller charges different prices for the same product; in some cases of differential pricing, the rate of return to the seller will be constant, because of different costs. Herbert Hovenkamp, *Federal Antitrust Policy: The Law of Competition and its Practice* 621 (4th ed. 2011)

²² Salil Mehra, *Antitrust and the Robo-Seller: Competition in the Time of Algorithms*, 100 Minn. L. Rev. 1323, 1375 (2016).

²³ See Ramsi A. Woodcock, *Dynamic Pricing as Monopolization*, 105 IOWA LAW REVIEW (2019).

increasingly unstable and variable, it is very difficult to know which factors are shaping the final price.

As a result, we suspect—but do not know—that airline companies are charging both variable prices but different prices depending on an individual’s browser history. Amazon “raises and lowers product prices millions of times a day using a complex algorithm based on competitors’ prices, supply and demand, and shopping habits.”²⁴ And while Amazon claims it does not change prices based on the consumer demographic, it does use loyalty discounts, which are a form of price discrimination, and it is hard to know, without knowing their algorithm, whether any historical behavioral data or predictive behavioral data is influencing the prices.

III. Algorithmically Personalized Wages

In the workplace, employer incentives and technologies can lead to similar forms of black box, unstable, labor prices. As in product markets, new surveillance and data-crunching technologies and market independently increase the likelihood of personalized pricing on their own and interact dynamically to increase the likelihood of personalized pricing.

Consider how ride sharing companies use power and information to create personalized wages for its drivers, and then obscure the reasons for those wages. Uber gathers data about how quickly drivers brake and how frequently they stop, and where, and for what. It then uses these analytics to deliver prompts purportedly matched to drivers’ data profiles. The company gives Uber drivers badges for “entertaining rides” and constantly ping them with reminders that they have nearly achieved a goal.²⁵ Uber also uses bonuses, but the bonuses are not stable. The changing targets appear to be designed to get drivers to complete more rides. The bonus payments are called “quests” and appear to be set at different levels for each driver. Leslie Hook describes how “algorithms assess what sort of financial incentive might lure each individual to work just a bit more.”²⁶ These bonuses are not trivial add-ons to a stable salary but make up almost a third of some driver’s weekly payments.²⁷

For-hire companies also individualize the screens the drivers see to incentivize behavior. For instance, it makes certain zones appear as “hotspots” to draw drivers there. The drivers get no more rides (or pay), but hot spotting makes the riders experience better because it reduces wait time.²⁸ While we can’t see inside the black box, we can see dimly--in this and other ways, Uber

²⁴ Daisuke Wakabayashi, *Does Anyone Know What Paper Towels Should Cost?* (New York Times, February 26, 2022) <https://www.nytimes.com/2022/02/26/technology/amazon-price-swings-shopping.html>

²⁵ Gad Allon, Maxime Cohen, Wichingpon Park Sinchaisri, “The Impact of Behavioral and Economic Drivers on Gig Workers,” The Wharton School, University of Pennsylvania, November 2018, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3274628

²⁶ Leslie Hook, “Uber: The Uncomfortable View from the Driving Seat,” Financial Times, October 4, 2017, <https://www.ft.com/content/c9a8b592-a81d-11e7-ab55-27219df83c97>

²⁷ Leslie Hook, “Uber: The Uncomfortable View from the Driving Seat,” Financial Times, October 4, 2017, <https://www.ft.com/content/c9a8b592-a81d-11e7-ab55-27219df83c97>

²⁸ Abbey Stemler, Joshua E. Perry, & Todd Haugh, *The Code of the Platform*, 54 GEORGIA L. REV. (2020).

uses behavioral science and massive information asymmetries to nudge drivers to make choices, confident that they will make them, without directing them to make those choices.

Like the Netflix feature that automatically loads a suggested “up next,” Uber has been sending their drivers fare opportunities designed to keep them driving, right before the last ride is over. Uber is using what is known as “Ludic Loop”, a technique that where occasional rewards for doing a repeat practice can strongly incentivize behavior, something you may recall from Tetris or Candy Crush. Like these games, “Uber dangles certain medals and badges in front of its drivers (via the app) to entice them and motivate them to keep going. Once you earn a badge, there’s always another badge to shoot for. The goal is clearly to identify “incentives without having to pay them.”²⁹ They defend this practice, by noting that “any driver can stop work literally at the tap of a button — the decision whether or not to drive is 100 percent theirs.”³⁰

Uber also tracked which drivers were driving for both Lyft and Uber, which then led them to give more incentives to the double-drivers. The point is not that these known examples are the outer limit of personalized treatment, or experimentation, but that they represent a small window into something that is likely to grow quickly. And while Uber and Lyft have been the most studied, they are not alone: GrubHub uses a tiered incentive model, where drivers with higher degree of order acceptance rates get privileges, like access to first dibs on catering orders, prime time delivery orders, and additional referral program bonuses. Postmates provides ongoing incentives and bonuses. The bonuses are more short-term goals and challenges you can complete.³¹ The result is a set of customized payments and a lack of clarity about what the wage is, and what the value of the task may be.³²

Dynamic pricing of the rides also leads to dynamic pricing of the labor. When more people want a ride, market demand pushes the potential ceiling price up, and Uber in some cases increases the wages paid by drivers to encourage them to drive. Uber describes dynamic pricing in passive terms: “We are not setting the price; the market is setting the price.... We have algorithms to determine what that market is.”³³ From the workers perspective, however, Uber is shifting the price regularly, whether it is doing so by tying compensation to an external indicator or set of indicators.

It is hard enough to know what Uber is doing: it is even harder to peer inside the black box of worker compensation at firms where the employees are classified as employees, but the little we know suggests similar techniques are used. Amazon warehouse workers--clearly classified as

²⁹ Peter Cappelli and Iwan Barkanay, Why Uber is Using Surprising Psychological Experiments to Motivate its Drivers, Wharton Magazine, <https://magazine.wharton.upenn.edu/digital/why-uber-is-using-surprising-psychological-experiments-to-motivate-its-drivers/>

³⁰ Noam Scheiber, “How Uber Uses Psychological Tricks to Push Its Drivers’ Buttons,” *New York Times*, April 2, 2017, <https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html>.

³¹ GrubHub v. Postmates: Driver Comparison Guide, Gigworker.com, January 8, 2020, <https://gigworker.com/grubhub-vs-postmates/>.

³² Gad Allon, Maxime Cohen, Wichingpon Park Sinchaisri, “The Impact of Behavioral and Economic Drivers on Gig Workers,” The Wharton School, University of Pennsylvania, November 2018, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3274628

³³ Zack Brown and Alexander McKay, Are Online Prices Higher Because of Pricing Algorithms (July 7, 2022) <https://www.brookings.edu/research/are-online-prices-higher-because-of-pricing-algorithms/>

employees--are subject to a combination of extreme Taylorism and nudges and may be subject to dynamic labor pricing.³⁴

Drawing on the Uber example, we can see how workers with essentially the same task get paid different amounts, get a salary with inputs from a combination of at five different labor pricing strategies: extreme Taylorism, gamification, first degree labor price discrimination, dynamic pricing, and experimentation.

A. Extreme Taylorism

At the heart of management in the last century was a belief, exemplified by Taylorism, that workers had simple motivation schemes. They wanted pay, and didn't like to work, and so close monitoring and control was required, lest workers take the pay and avoid the work. Taylorism depended on small, easy to measure tasks, regularized training, and payment based on production. Extreme Taylorism is a direct outgrowth of these former tools, but with unheard of levels of precision measuring time in the bathroom and time per unit task, not just the total number of units processed over an hour. Along with contracts that allow dynamic merit to pay, extreme Taylorism means that employees can be rewarded or docked on a far more ongoing, updated basis. Firms measure time spent on various activities and can use real-time bonuses off a baseline to reward those activities. When Amazon follows workers physical location and tracks multitasking it can then dock pay for long breaks in real time.

Extreme Taylorism is enabled when employees wear badges with embedded microphones, are subject to identification systems, and are subject to software that tracks mood, tone, facial expression, location. Tools record keyboard strokes and conversations. Monitoring and experimentation systems include thumb scans, identification badges, closed circuit cameras, geolocation tracking, sensors on tablets and vehicles. Software flags productivity but "negative attitudes." Others analyze emails and rate an employee's emotional status based on word patterns and content.

The connection between some of this data and extreme Taylorism is straightforward. High degrees of surveillance allow for rewarding productivity, down to the head-swivel, and rewarding service employees who bring more value to the company. For example, the company Cogito sells software to call centers that records and then analyzes calls between employees and customers, with a real-time behavioral dashboard that tells the employees when to be more empathetic, when to pick up the pace, when to "exude more confidence and professionalism."

³⁴ Greg Bensinger, "'MissionRacer': How Amazon Turned the Tedium of Warehouse Work Into a Game," *Washington Post*, May 21, 2019, <https://www.washingtonpost.com/technology/2019/05/21/missionracer-how-amazon-turned-tedium-warehouse-work-into-game/?noredirect=on>

Supervisors have dashboards summarizing these performance metrics. These tools are used to impact pay and retention.³⁵

B. Gamification

Uber tracks millions of metrics every day and then delivers individualized tasks to drivers, and some of the reasons for the differentiation appear to be related to gamification.³⁶ Journalist Sarah Mason describes how companies incorporate “the use of game elements – point-scoring, levels, competition with others, measurable evidence of accomplishment, ratings and rules of play – in non-game contexts.”³⁷ She notes that games “deliver an instantaneous, visceral experience of success and reward, and they are increasingly used in the workplace to promote emotional engagement with the work process, to increase workers’ psychological investment in completing otherwise uninspiring tasks, and to influence, or “nudge”, workers’ behavior.”³⁸ Like gambling, much of the effectiveness of the systems depend on both personalization (differentiation) and some degree of inconsistency. Mason compares these games to those used by Las Vegas casinos who “surveil, track and analyze the behavior of individual gamblers in real time – just as ride-hailing apps do.” Just as casinos “triangulate any given gambler’s player data with her demographic data, piecing together a profile that can be used to customize game offerings and marketing appeals specifically for her”. “Lyft tells me that my weekly ride challenge has been “personalized just for you!”³⁹

Amazon started using video games in five warehouses from suburban Seattle to near Manchester in Britain, after an initial experiment in a single warehouse in late 2016. With names like MissionRacer, PicksInSpace, Dragon Duel and CastleCrafter, the games have graphics that mimic Nintendo, according to workers (employees aren’t allowed to take pictures). Success at these games can lead to changes in wages--one worker reported managers rewarding successful workers with “Swag Bucks” an internal currency that can be used to make purchases.⁴⁰

C. Behavioral Price Discrimination

Wellness programs track health and lifestyle choices using fitness trackers and smartphone apps, and companies already give bonuses through differential benefits packages based on health, a form of personalized wages. A company may explain that healthier employees are more likely to

³⁵ Bernhardt, Annette, Lisa Kresge, and Reem Suleiman. Data and Algorithms at Work: The Case for Worker Technology Rights. Center for Labor Research and Education, University of California, Berkeley. November 2021 <https://laborcenter.berkeley.edu/data-algorithms-at-work/>

³⁶ Sarah Mason, “High Score, Low Pay: Why the Gig Economy Loves Gamification,” The Guardian, November 2018, <https://www.theguardian.com/business/2018/nov/20/high-score-low-pay-gamification-lyft-uber-drivers-ride-hailing-gig-economy>

³⁷ Sarah Mason, “High Score, Low Pay: Why the Gig Economy Loves Gamification,” The Guardian, November 2018, <https://www.theguardian.com/business/2018/nov/20/high-score-low-pay-gamification-lyft-uber-drivers-ride-hailing-gig-economy>

³⁸ Id.

³⁹ Id.

⁴⁰ [T]he rush to gamify comes with risks, said Jane McGonigal, a video game designer who has studied workplace gamification. “Competition is only enjoyable for a short time,” she said. “As soon as workers start underperforming against their colleagues, it becomes less fun and can actually be counterproductive.”

be more productive employees, but if wages or benefits are based on health status directly, and not on productivity,

While tracking on-site activity can be justified by productivity concerns, the off-site tracking, and social media tracking, creates a trove of data that can be used to target prices for non-productivity reasons. Firms track activity on other websites and at other brick and mortar locations. They combine the data collected directly on their own sites with personal data bought on the open market.⁴¹ As a recent report from the Center for Labor Research and Education at Berkeley detailed, data on social media activity, credit reports, consumer history, and driving reports are bought from third parties. Employers are regularly partnering with tech vendors on wearable sensors that collect biometric and health and wellness data.⁴²

The data collected by Cogito, described above, could be used to reward productivity, but could also be used in combination with other worker profiles to shape worker pay for reasons that are disconnected with the value the employee brings to the company, and instead connected with

Companies examine employees' internet browsing histories, social media usage, emails, and phone calls. I have not seen direct evidence of wages tied to this information, but workers report that they have seen their employers punish or demote based on political activity, a form of first-degree labor pricing.

D. Dynamic Labor Pricing

In the gig economy, dynamic labor pricing is baked into the business model. Dara Kerr reported two months ago that after an examination of various driver reports about their compensation, drivers who used to be able to make back of the envelope calculations based on distance and location and time of day are no longer able to do so. Some of this may be due to personalized pricing, but it seems likely that much of the variation also has to do with pricing based on constantly changing demand, like the surge pricing (which in turn allows for surge labor pricing to incentivize more drivers).

Outside of gig work, I have not seen reports of dynamic labor pricing, but firms --- especially those with monopsony power---can write contracts that make bonuses ongoing in the same way they are ongoing for Uber drivers, and in so doing, can engage in real-time labor pricing based on demand.

E. Experimentation

In the late 1920s, inspired by Frederick Taylor, a psychologist from Harvard Business School ran a series of experiments on workers at Hawthorne Works, an electric company in Illinois, that became known as “the Hawthorne Studies.” They tested the impact of light on productivity and found that it had no impact. Then they experimented on wages and explored whether changing

⁴¹ Bernhardt, Annette, Lisa Kresge, and Reem Suleiman. *Data and Algorithms at Work: The Case for Worker Technology Rights*. Center for Labor Research and Education, University of California, Berkeley. November 2021 <https://laborcenter.berkeley.edu/data-algorithms-at-work/>

⁴² Bernhardt et al, *supra* note 5.

pay based on performance impacted productivity. In one group, they gave higher pay to those who were more productive in assembling equipment; in a control group, they did not. They found that the increased wages did not incentivize productivity. Instead, productivity was more likely to be spurred by group pressures and group standards.⁴³

The experiments, whose results have left a long wake, are interesting not just for the results but for the way in which they reveal that workers have no default sense of an expectation to be free of experimented on—even with wages—at work. Since then, firms have routinely conducted experiments on workers, testing assumptions about what will lead to the firm gathering the highest output for the wages it pays. However, wage experimentation at a level likely to reveal meaningful results was practically very difficult until recently, when surveillance, big data, and electronic contracts with the possibility of real-time bonuses enabled low-cost wage experiments.

In 2014, we learned that Facebook used 700,000 users as part of a psychology experiment to test, monitor, and direct behavior.⁴⁴ The experiment, which gave users different amounts of positive or negative posts, was done to figure out if Facebook could shape the emotional state of users. It is easy to imagine employees doing similar tests on mood, unbeknownst to workers. The experimenting hasn't stopped. It conducted a trial a few years later where pages were taken off the news feed in some areas, but not in others.⁴⁵ OKCupid, with its database of people looking to date, has experimented in an ongoing including with a trial where pairs of users who had an internal 30% compatibility and listing them as a 90% match. This kind of experimentation was in fact done with a later notification about what happened but exemplifies the kind of experimentation that routinely happens with big data sets—usually with consumers.⁴⁶

Those are consumer examples but there are also examples from labor. When Instacart got in public trouble for using tips to supplement wages, we also learned that it was experimenting with wages.⁴⁷ Delivery pay was initially like piecework in farming: a flat rate per item. The company started adding bonuses, and then other factors, such as product weight and distance. And over the

⁴³ C.W.M. Hart, The Hawthorne Experiments, 9 *Canadian J. Econ. & Pol. Sci.* 150, 153-54 (1943).

⁴⁴ Farhad Manjoo, "A Bright Side to Facebook's Experimentation on Its Users," *New York Times*, July 2, 2014, <https://www.nytimes.com/2014/07/03/technology/personaltech/the-bright-side-of-facebooks-social-experiments-on-users.html>; Dominic Rushe, "Facebook Sorry – Almost – For Secret Psychological Experiment on Users," *The Guardian*, October 2, 2014, <https://www.theguardian.com/technology/2014/oct/02/facebook-sorry-secret-psychological-experiment-users>

⁴⁵ Stevan Dojcinovic, "Hey Mark Zuckerberg: My Democracy Isn't Your Laboratory," *New York Times*, November 15, 2017, <https://www.nytimes.com/2017/11/15/opinion/serbia-facebook-explore-feed.html>

⁴⁶ Raquel Benbunan-Fich, "The Ethics of Online Research: From A/B Testing to C/D Experimentation," *Research Ethics*, <https://journals.sagepub.com/doi/pdf/10.1177/1747016116680664>.

⁴⁷ Nitasha Tikku, "She was Instacart's Biggest Cheerleader. Now She's Leading a Worker Revolt," *Washington Post*, December 10, 2019, <https://www.washingtonpost.com/technology/2019/12/10/she-was-instacarts-biggest-cheerleader-now-shes-leading-worker-revolt/>.

years, with small changes, the pay changed from being clearly tied to kinds of productivity to being a black box. Along the way, the company was reported constantly experimenting.

What we would expect is that that firms with market power, ability to deliver real-time bonuses, and data collection capacity would be regularly testing the relationship between bonuses and productivity, and other special treatments and productivity.

In other words, while we do not know the full scope of experimentation that is going on with workers, we can guess that a combination of power dynamics and information asymmetries will lead to a rise in experimentation that workers are unaware of in practice.

IV. Economic and Democratic Implications

Personalized labor pricing strategies have the power to shift capital and power to the employer and protect market power. While I cannot predict with certainty that personalized wages will become ubiquitous, they could do so, and they are already here in some critical industries. Therefore, we need to consider the economic and democratic implications of these modes of wage setting.

Personalized wages implicate equality concerns in two ways, as both practice and effect. First, the act of discrimination because of characteristics that are unrelated to productivity is an essential violation of the moral value of equality, where we value a principle of each person being treated the same. The instinct that such treatment is unfair is deeply rooted, no matter how frequently the principle is violated.⁴⁸

The practice can also exacerbate wealth inequality. Big data and artificial intelligence allow product sellers to identify prices tailored to individual purchasers, exploiting informational asymmetries and behavioral quirks, weaknesses, and biases in ways that both undermine autonomy and shift power and profit to firms who already have market power.⁴⁹ Price discrimination is a tool for wealth transfer from buyers to sellers in product markets. A seller who intends to maximize profits using price discrimination, will use a scalpel to identify the maximum price at which each consumer will buy, and scoop out the largest amount of wealth from consumers as a class. As a matter of theory, price discrimination could either result in wealth transfers from wealthy purchasers to sellers, or from poor purchasers to sellers. Wealthy purchasers may be willing to pay more for certain goods, allowing price discrimination to have a redistributive effect—the wealthy purchasers effectively subsidize at-cost pricing for the poorer purchasers. In practice, however, wealthy purchasers frequently have more information, patience, and ability to negotiate, whereas poorer purchasers have more urgent needs, less time for arbitrage, and less information about alternatives. Therefore, price discrimination can lead to a

⁴⁸ Pascale Chapdelaine, *Algorithmic Personalized Pricing*, 17 NYU J.L. & Bus 1 (2020).

⁴⁹ Symposium: *Personalized Law: Down by Algorithms? Siphoning Rents, Exploiting Biases, and Shaping Preferences: Regulating the Dark Side of Personalized Transactions*, 86 U. CHI L. REV. 581, 582-583 (2020).

wealth transfer from poor to wealthy purchasers, with the poorer purchasers subsidizing the wealthy while increasing output.⁵⁰

The “rent siphoning” problem of first-degree price discrimination and dynamic pricing in product markets is an even bigger problem in labor markets. If firms can identify the maximum surplus that they can make in every firm-worker transaction, it will lead to increased inequality, and firms exploiting behavioral weaknesses to keep workers constantly on the verge of leaving. A purchaser of labor power who has the capacity to tailor each wage to the minimum possible wage that the worker would take on any given day would lead to a straight transfer of wealth from the worker to the firm. In theory, that wealth could then be used for more capital expenditures to improve productivity and lower consumer prices, but in terms of the immediate transaction, personalized wages represent a straightforward wealth transfer from the worker to the firm.

Algorithmic management also transforms the nature of supervision, and the power and sentimental relationships between supervisors and mid-level decisionmakers and locates the decision-making in a combination of the upper-level management and the results of hyper-individualized tools that rely on spying and psychological updating. Not only do the direct supervisors have little power, but the workers are then employed in a state of rational paranoia, where they know that they are being punished and rewarded and experimented upon, but they have no way of knowing whether any given decision they are faced with is a result of a game, an experiment, a punishment, or reward, or changing circumstances on the ground and changing needs at the job. As Mason reported, this rational paranoia is a major topic of conversation for Uber drivers:

Because the logic of the algorithm is largely unknown and constantly changing, drivers are left to speculate about what it is doing and why. Such speculation is a regular topic of conversation in online forums, where drivers post screenshots of nonsensical ride requests and compare increasingly lackluster, algorithmically generated bonus opportunities. It is not uncommon for drivers to accuse ride-hailing companies of programming their algorithms to favor the interests of the corporation.⁵¹

Leslie Hook notes that these new systems are not only a direct hit on wages, but also on the experience of autonomy, and they are designed as such:

It gets to a point where the app sort of takes over your motor functions in a way,” says Herb Coakley, a longtime driver who developed an app that helps drivers simultaneously drive for both Uber and Lyft. “It becomes almost like a hypnotic experience,” he explains. “You can talk to drivers and you’ll hear them say things like, I just drove a bunch of Uber pools for two hours, I probably picked up 30-40 people and I have no idea

⁵⁰ Ariel Izrahi, Maurice Stucke, *VIRTUAL COMPETITION: THE PROMISE AND PERILS OF THE ALGORITHM-DRIVEN ECONOMY* (2016).

⁵¹ Sarah Mason, “High Score, Low Pay: Why the Gig Economy Loves Gamification,” *The Guardian*, November 2018, <https://www.theguardian.com/business/2018/nov/20/high-score-low-pay-gamification-lyft-uber-drivers-ride-hailing-gig-economy>.

where I went. “In that state, they are literally just listening to the sounds [of the driver’s apps]. Stopping when they said stop, pick up when they say pick up, turn when they say turn. You get into a rhythm of that, and you begin to feel almost like an android,” he says.”

Being dominated, watched, and controlled—a necessary feature of personalized wages—has a significant on the worker, who is also a citizen. Professor Kate Crawford writes, “These platforms treat workers as subjects of constant experimentation, often in ways that destabilize their economic and even psychological security.”⁵² The more precarious, the more vulnerable to reward systems and the more needy for the extra income that may or may not flow but is held out as a possibility. But high degrees of personalization means that the employee/business can micromanage and maximally extract from each worker what they are willing to give without reaching the breaking point. Professor Crawford’s study concluded that while one could not prove a causal connection, there is a high degree of correlation between AI systems, low wages and changing working conditions. “Similar to other algorithmic management systems, these function by pooling information and power together for the benefit of owners, managers, and a handful of developers, allowing companies to optimize such systems in ways that maximize revenue without regard to the need for stable and livable wages or predictable incomes, schedules, and availability of work.”⁵³

The employment contract allows bonuses and changing terms, so long as the employee agrees to them: which employees in concentrated labor markets without union representation are likely to do.⁵⁴

The right to privacy in one’s thoughts and actions is fundamental, a basic right that implements the democratic commitment to human dignity. Privacy implicates the right of people to have control over the boundaries of what is known about them—both what they want to protect from view, and what they want to project in the public arena. While employers have always supervised and monitored and—since the 1990s—recorded an enormous amount of data about employees, the opportunity to collect data that allows for targeted wages increases the incentive to monitor substantially, and the opportunity to collect data that allows for experimentation and extreme Taylorism does the same.

Therefore, the privacy concerns which have long attended the workplace—and never been adequately addressed—move from second order concerns to first order concerns as the scope of monitoring increases, and the arenas which are monitored move from the superficial to the

⁵² Crawford, Kate, et al., *AI Now 2019 Report*, New York: AI Now Institute, December 2019, https://ainowinstitute.org/AI_Now_2019_Report.pdf

⁵³ Crawford, Kate, et al., *AI Now 2019 Report*, New York: AI Now Institute, December 2019, https://ainowinstitute.org/AI_Now_2019_Report.pdf

⁵⁴ Suresh Naidu, Eric Posner, and Glen Weyl, *More and More Companies Have Monopoly Power Over Workers’ Wages. That’s Killing the Economy*, Vox.com (Apr. 6, 2018), <https://www.vox.com/the-big-idea/2018/4/6/17204808/wages-employers-workers-monopsony-growth-stagnation-inequality>; Alan B. Krueger & Eric A. Posner, *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*, The Hamilton Project, (Feb. 2018), https://www.hamiltonproject.org/assets/files/protecting_low_income_workers_from_monopsony_collusion_krueger_posner_pp.pdf.

intimate. As Michael Selmi has argued, privacy constitutes the person, and while “it is one thing to give an employer broad dominion over its own workplace, but it is quite another to extend that dominion wherever the employee goes.”

Eben Moglen, writing about the problem of government surveillance, said that “omnipresent, invasive listening creates fear, and fear is the enemy of reasoned, ordered liberty.” The same concerns are implicated here. Personalized wages confuse the neat categories of worker and citizen, as firms play a quasi-governmental role. In her 2017 book, *Private Government*, Political Philosopher Elizabeth Anderson argued that employment is a key site of governing, and that we fail to see the governing role of the workplace because of a modern cognitive misclassification. Through most of American history we understood that the government was not coterminous with the state; governing exists when we grant sufficient power to any entity to regulate people in a substantial way.⁵⁵

As with all power dynamics in America, racial equity is also implicated. The power to discriminate on a personalized basis, especially when the pricing formulas are opaque, creates the conditions under which characteristics which can be proxies for race are used in a way that directly⁵⁶ harms Black and brown workers. For instance, if a firm’s algorithm signals that workers with less savings are more likely to be unable to quit work due to low pay, the disparate impact would fall on Black and brown workers who are less likely to have any intergenerational savings.

As Veena Dubal and Sarah Jaffee have both argued, it is not accidental that the arenas of work with the lowest degree of privacy protections and public embrace of firms using tools of control and manipulation are industries dominated by Black and brown workers. Think home care or Uber driving. Professor Dubal illustrates how the ostensibly abstract debate over the legal identity of gig workers is a concrete debate about the power of Black and brown workers, and their rights to be seen as rights-bearing citizens. The “digitally-personalized piece pay” that is part of this conflict is a direct legacy of slavery and reconstruction wage codes, she argues.⁵⁷

Another way to see these dangers is that personalized pricing necessarily requires power and surveillance, and surveillance by an entity with power over you—including the direct power to hire and fire—is a direct threat to political liberty. Whether by design or as an artifact, the systems of surveillance and control are gathering political viewpoints and monitoring political conversations. When wages are unstable, this information collection accompanies the credible threat of information being used to suppress wages or change compensation. An employer, with the power of firing or demotion, or even lack of promotion, is more salient for most people than the power of the state to do anything about one’s thoughts or views. When your boss has the power to know your political beliefs and the power to treat you differently based on those beliefs, it seems likely that that power and the understanding of that power, which is

⁵⁵ Elizabeth Anderson, *Private Government*, Princeton University Press (2017).

⁵⁶ Eben Moglen. See also Bruce Schnier, *Data and Control: The Hidden Battles to Collect Your Data and Control Your World* 91-151

⁵⁷ Veena Dubal, *The New Racial Wage Code*, Harvard Law and Policy Review 2021
<https://ssrn.com/abstract=3855094> or <http://dx.doi.org/10.2139/ssrn.3855094>

communicated through the presence of sensors and microphones and cameras—shapes private thought, private conversations, and the development of arguments and ideas.

Intrusive surveillance and experimentation and differentiation necessarily shapes speech and debate in a way that consumer surveillance does not. The component parts are not businesses, but people who are not just workers but citizens, who must vote, serve on juries, share their experiences with the public, and engage in public debate. Citizens are also subject to some of the same monopoly practices in their role as consumers, but the relationship between the consumer and surveillance capitalism and the worker and the surveilled workplace is different. At work—when labor markets have a handful of dominant players—the employee doesn’t even have the theoretically option of opting out of being watched. Negotiating the terms of surveillance and experimentation simply doesn’t happen. Unlike the consumer, the worker is surveilled for the entire scope of their workday, with no default right of respite.

When you combine personalized labor pricing with a lived experience of firms having strong political views, it will lead to all kinds of distortions in the political sphere. 16% of workers surveyed recently reported that they had either personally experienced or witnessed political retaliation on the job. One in eight American workers believes that “someone at their job was treated unfairly, missed out on a promotion, or was fired as a result of political views or actions.”⁵⁸ It is unclear the degree to which employers are purposeful tracking the political activities of employees, but the scope of the sweep they conduct on a daily basis means that the conversations and online behavior are necessarily being gathered, whether or not purposefully used. With both capacity and incentive, we should anticipate that political spying will be a growth area. In the wake of *Citizens United*, corporations are free to engage in explicitly political activity, to monitor and respond and dissuade and punish. And just as importantly for society workers know they have this power and believe they will use it.

Differentiating between the worker who had different political views than her coworker, and the fact of the tracking does two things: it makes actual political discrimination possible, and it makes perceived political discrimination likely. When you know someone is tracking your every word, and has power over you, it is difficult not to conjecture that the microphone embedded in your name tag might be used against you.

Finally, these kinds of targeted wages also impact solidarity. Companies have long profiled rabble rousers who themselves might be the leading causes of worker unionization and treated them differently to make it harder to unionize. While it is illegal to use spying to stop labor organizing, spying used in a generic way can nonetheless chill it. A few years ago, Google employees accused Google of using a calendar extension as a surveillance tool for meetings of

⁵⁸ Alexander Hertel-Fernandez, *POLITICS AT WORK: HOW COMPANIES TURN THEIR WORKERS INTO LOBBYISTS* (New York: Oxford University Press, 2018), 90.

more than 100 people. The employees argued that the extension, which automatically recorded these meetings, was designed to spy on and deter planned protests or union organizing.⁵⁹

Surveillance wages can turn any employee, even those with the benefits and rights of a fully classified employee, into something more like a contractor in terms of stability and isolation. The constant experimentation is necessarily destabilizing. Uber workers are routinely kicked off platforms without a procedure and struggle to get reinstated through a mysterious process; while an employee may have a procedure, they will nonetheless experience the constant fear of being demoted or not getting a prior bonus, or being fired, based on a massive pile of information that the employer can understand and manipulate, and that the employee has little access to. Stability, predictability, and autonomy outside of the workplace—some of the better features of large workplaces over the last 100 years—will vanish even at work.⁶⁰ That inevitably shapes political identity and motivations.

Personalized wages also confuse the role of consumer and citizen because employers use consumer data in their profiling and create incentives that mimic the kind of incentives given to consumer-gamblers and social media consumers. For instance, workers are subject to increasing demands to pay for the costs of their own employment. When delivery drivers are asked to supply their own car, for instance, they are both worker and potential consumer, as the company can steer the driver towards cars and finance schemes. When a call center worker is bonused based on the reaction of customers to her voice, she may also be a potential consumer of voice-training, something that the employer or a related company could provide. Add big data and dominance to that dynamic, and you see that the worker/consumer is surveilled in both roles, and the roles are not neatly divided.

In sum, the specter of personalized wages on a significant scale should be concerning as a democratic threat, a threat to autonomy, dignity, privacy, equality, racial justice, and fairness.

VII. Antimonopoly Responses

Price discrimination has been seen as a monopoly problem for generations. Price differentiation by large, powerful firms was perceived as a central problem throughout reconstruction and the progressive Era. The Progressives talked about price discrimination as one of the evil features of the trusts, including Standard Oil. In Ida Tarbell's famous tract on the company, discriminatory treatment of different counterparties runs throughout her characterization of the railroad and oil industries. She describes the public outcry over railroad pricing discrimination this way:

The sentiment against *discrimination on account of amount of freight or for any other reason* had been strong in the country since its beginning, and it now crystallized immediately. The country so buzzed with discussion on the duties of the railroads that reporters sent from the Eastern newspapers commented on it. Nothing was commoner,

⁵⁹ Nick Statt, "Google Accused of Spying with New Tool That Flags Large Employee Meetings," The Verge, October 23, 2019, <https://www.theverge.com/2019/10/23/20929524/google-surveillance-tool-accused-employee-activism-protests-union-organizing>

⁶⁰ Crawford, Kate, et al., AI Now 2019 Report, New York: AI Now Institute, December 2019, https://ainowinstitute.org/AI_Now_2019_Report.pdf

indeed, on the trains which ran the length of the region and were its real forums, than to hear a man explaining that the railways derived their existence and power from the people, that their charters were contracts with the people, that *a fundamental provision of these contracts was that there should be no discriminating in favour of one person or one town*, that such a discrimination was a violation of charter, that therefore the South Improvement Company was founded on fraud, and the courts must dissolve it if the railways did not abandon it.

Discounts based on bulk were seen as a fundamental violation of the charter obligations. Calls to dissolve the monopolies “scheming strength” came from their ability to charge different prices to different towns and counterparties. While predatory pricing drove some of the anger, non-predatory price differentiation did as well. In its 1907 Report on the Petroleum Industry, the U.S. Bureau of Corporations concluded that “Price discrimination does not necessarily mean cutting prices in competitive towns to an unprofitable level. It exists also where such prices, though returning a fair or even a good profit, are far less profitable than in towns where no restraint is put on the power of monopoly.”⁶¹

Policy solutions to discriminatory pricing from the 1870s to the 1950s ranged from common carriage, to antitrust, to banning the practice. The Interstate Commerce Act, the first big federal antimonopoly law, requires that railroad rates be “reasonable and just.” It required posted prices for shipping rates and banned price discrimination based on the length of the haul. Short haul pricing discrimination—where shorter hauls charged more than longer ones—had been one of the biggest complaints from farmers and small-town advocates. The 1887 Act also created the first major regulatory agency, the Interstate Commerce Commission, to hear evidence and make decisions on claims of rate and transparency violations.

A few years later, the Sherman Act was passed, banned monopolies and conspiracies to monopolize. Given the inability of states to subdue the pricing power of the trusts, the Act was seen as a key mechanism for subduing the power of companies to untie cost and price by building pricing power. The 1914 Section 2 of the Clayton Act addressed pricing and banned one form of price discrimination—when the purpose or intent was to undermine competitors.⁶² The Robinson-Patman Act, built on this provision. Passed in 1936 Robinson Patman grew out of anger about pricing advantages received by large chain stores who were pushing out smaller grocery sellers. The Act prohibits a seller of tangible goods from charging different prices to equally situated distributors where such sales lessen competition, for instance, by giving an advantage to the business who receives the lower price in the market. For instance, if a Wholesale seller of shoes sells 50 shoes to Walmart, and 50 shoes of the same quality and style to a family-owned store in Millbrook, New York, both Walmart and the family owned store should be charged the same price for the 50 shoes.

No general-purpose price discrimination law was passed in the Progressive era, but it was a central and lively part of debates, with Louis Brandeis and others opposing even coupons as

⁶¹ Christopher Leslie, *Revisiting the Revisionist History of Standard Oil*, 85 S. CAL. L. REV. 573 (2018) https://southern-california-law-review.com/wp-content/uploads/2018/01/85_573.pdf

⁶² *Report of the House Committee on the Judiciary*, 63d Cong., 2d. Sess., Misc. H. R. Rep., v. 2, no. 627, May 6, 1914, at 8.

forms of price discrimination. The anti-coupon contingent saw first degree price discrimination as both evidence of, and abuse of, governing power.

Robinson-Patman has been roundly criticized for decades, and while it was not technically repealed in the 1970s (despite an effort to do so), it has been treated as a dead letter since the 1970s until recently, when there is renewed interest. The criticisms range widely but tend to follow these two lines (a) it values some business interest over some consumer interests, which are presumably for short term prices and (b) it creates consequences for charging lower prices in some circumstances, creating the risk of impairing price competition.⁶³

Even while post-Chicago School mainstream economics has dismissed concerns about price discrimination, the public maintained a strong sense that price discrimination was an ethical problem, not merely an economic one.⁶⁴ Consumers surveyed “overwhelming” consider “all forms of price discrimination as ethically wrong.”⁶⁵ As Duke Law Professor James Boyle described it in 2000: “Lay people often react to differential pricing for the same good with a sense of unfairness. No matter how many times they are lectured by the economists that it is to the benefit of all that producers be able to charge different prices to groups with different ability and willingness to pay, the popular reaction is normally, “that’s not fair.”⁶⁶

In short, price discrimination from the 1870s through the 1970s was understood through a political, moral and economic lens.⁶⁷ As a 1959 price discrimination treatise described it, the value of equal treatment the a “political” idea upon which the key price discrimination statute, the Robinson-Patman Act is grounded.⁶⁸ The economic lens, which became predominant after the 1970s revolution but was always part of the understanding, treats price discrimination through how it shapes resource allocation.

Building on these histories, we should explore whether first-degree labor price discrimination could be circumscribed or banned. This argument tracks the argument made in product markets, where some economists have argued that price discrimination should be banned on the grounds of unconscionability,⁶⁹ or that it should be banned on the grounds that it harms consumers and is only enabled by monopolistic power.⁷⁰

Banning first degree labor price discrimination is no small task, especially in the United States, where there is a broad culture of allowing employers near absolute discretion in wage setting outside of prohibited categories of age, sex, race, and the other limited protected categories. (Curiously when I raised this topic at an AI and work panel in Europe recently, I was told quite

⁶³ For a fuller discussion of Robinson Patman and its critics,

⁶⁴ Joseph Turow et al., Open to Exploitation: American Shoppers Online and Offline (2005), http://www.annenbergpublicpolicycenter.org/04_info_society/Turow_APPC_Report_WEB_FINAL.pdf.

⁶⁵ Id.

⁶⁶ James Boyle, Cruel, Mean, or Lavish? Economic Analysis, Price Discrimination and Digital Intellectual Property, *53 Vand. L. Rev.* 2007, 2038-39 (2000).

⁶⁷ Corwin D. Edwards, *The Price Discrimination Law* 2-4 (1959)

⁶⁸ Id.

⁶⁹ “A sound policy would prohibit firms from charging different prices based solely on the identity of the customer.” Clock, *supra* note 13.

⁷⁰ Woodcock, *supra* note 23.

vehemently that wage price discrimination was already illegal—and while I could not find supporting evidence, the cultural difference was quite striking!). It would be especially difficult to envision a ban on price discrimination in the small and medium sized businesses, and in highly decentralized local markets.

Building on these old principles there are different ways in which new labor monopsony provisions could interact with personalized labor pricing. We could ban first degree labor price discrimination (putting the burden on the employer to justify differential pay on the grounds of differential work). We could ban first degree labor price discrimination for dominant firms (roughly, firms controlling more than 20% of the labor market (including economic employers). Evidence that a company was using any non-productivity related data could either be probative, or presumptive evidence of illegal wage pricing. We could treat first degree price discrimination as evidence of dominance, after which a set of abusive behaviors would be banned.

Finally, we could skip the ban and simply mandate public wage scales, at least for companies of a certain size or certain market share. A set of employers, including large firms, would have to use published wage scales, much as they do in the collective bargaining context. Negotiated wage scales, which are central in any labor agreement, typically list job classifications and pay grades. They can also include whether employees will move up the wage scales over time, and the amount of time it takes to move up each step.

The other antimonopoly tool that could be useful is antitrust. The rise of surveillance means that we also need more enforcement against labor monopsony, because labor monopsony is the condition under which this kind of price discrimination can flourish. A strong labor monopsony provision, along with laws making organizing easier, would change the power dynamic at work in such a way that individualized treatment of different workers wouldn't make sense.⁷¹

To be clear, I do not think antimonopoly solutions should supplant other solutions. Employees currently have no reasonable expectation of privacy at work, and searches at any time without permission are expected, and any use of work email, phones or work social media or other tools can be studied without any permission⁷² There are no federal laws meaningfully limiting surveillance at work.⁷³ A California court found that an employer using access to an email account to investigate his compensation claims clearly represented a privacy intrusion, the invasion of privacy tort and related torts is a remarkably weak tool against employers for gathering information.⁷⁴ While some states have protections for public sector workers, some states have begun to institute privacy limits on what an employer can require, handful of states forbid employers from demanding access to passwords, and others have limits on employers' use of social media. And while some states require consent before gathering some communications information, the typical power dynamic is such that employees will almost always agree. Even the European GDPR, which is sometimes held up as a model that will give workers more

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⁷² *The Invisible Web at Work: Artificial Intelligence and Electronic Surveillance in the Workplace*, 41 BERKELEY J. EMP. & LAB. L. 1 (2020)

⁷³ Ifeoma Ajunwa, Kate Crawford, Jason Schultz, *Limitless Worker Surveillance*, 105 CALIF. L. REV. 735 (2017).

⁷⁴ *Id.*

power,⁷⁵ is primarily a set of procedural rights, not either power rights or substantive ones, and consent-based, significantly weakening their power when applied to a worker-employer context.⁷⁶

At a minimum, we should explore banning the use of any off-work information. Michael Selmi argues for a ban on all terminations or employment-based consequences for off-work activity in the absence of a clearly specifically articulated business interest.⁷⁷ Terry Morehead proposed a similar change, a requirement of a connection between the off-work actions and the legitimate employer interests.⁷⁸ I might seek an even stricter rule, but even if all off-site data cannot be used, the employer can still use algorithms and on-site behavioral data to manipulate and personalize wages. A strong privacy bill of rights hand in hand with strong antidiscrimination rules would be the strongest option.

Perhaps most importantly, I want to shift the framework of legitimacy within which we discuss things like first degree labor price discrimination and highlight the degree to which it represents power that can be constrained on its own terms.

II. Conclusion

One of the jobs of democracy is to protect citizens from being overly politically dependent or politically fearful of any feudal lord. There is a reason we think of economic feudalism and democracy as incompatible: if you have radical dependency within significant economic spheres, then the bare right to vote cannot solve and enable meaningful debate, participation and voting in a serf class. Unchecked concentration of private power in our society has become a disease that is eating away—from the inside—at the institutions that make it possible to have a self-governing society.⁷⁹ the growth of private government co-existing with public government is a direct result of 40 years of weak and poorly theorized antitrust policy.

Because we operate in real obscurity about what is happening at the workplace, and we know from targeted ads how quickly the ground can change, we should treat personalized wages as a present threat, and think now about how to limit their reach. As a society, we should implement structures to stop the possibility of personalized wages in blue collar work, where the power asymmetries are the greatest, to forestall their growth.

While federal antimonopoly is frequently treated as fundamentally “about” economics, and incidental about political power, as a matter of statutory history it is every bit as much

⁷⁵ Michele E. Gilman, *Five Privacy Principles (From the GDPR) The United States Should Adopt to Advance Economic Justice*, 52 ARIZ. ST. L.J. 368 (2020).

⁷⁶ Privacy proposals fall into three camps: increased procedural rights (the right to be notified), bans on collection of information at work, and bans on collection of information from outside of work Leora Eisenstadt, *Data Analytics and the Erosion of the Work/Nonwork Divide*, 56 Am. Bus. L.J. 445 (2021).

⁷⁷ Michael Selmi, *Privacy for the Working Class: Public Work and Private Lives*, 66 La. L. Rev 1035 (2006).

⁷⁸ Terry Morehead Dworkin, *It's My Life--Leave Me Alone: Off-The-Job Employee Associational Privacy Rights*, 35 Am. Bus. L. J. (1997)

⁷⁹ Zephyr Teachout and Sabeel Rahman, *From Private Bads to Public Goods*
<https://knightcolumbia.org/content/from-private-bads-to-public-goods-adapting-public-utility-regulation-for-informational-infrastructure>

“about” restraining political pathologies as about enabling a thriving economy. And while antimonopoly law is frequently treated as essentially synonymous with antitrust, in fact the antidiscrimination principles may serve to be as important as the antitrust ones in protecting democracy. While we must look at privacy protections, and bolstering workers’ rights, we cannot do so effectively without also using traditional antimonopoly approaches of antitrust and antidiscrimination to address what is at heart at crisis of power and autonomy.