Platforms, both related to work and more widely, have become an increasingly popular area of research. With work platforms specifically, many of the early arguments focused on how platform workers were "unorganizable" or that this new kind of work marked a departure from previous forms of work. While such claims about resistance and organizing have become less common—particularly in the face of increasing worker self-organization on transport platforms—there remains an obsession with the "new" role of data and algorithms in this work. For example, the algorithm has taken center stage in much research on Uber (see Lee et al. 2015; Rosenblat and Stark 2016; Scholz 2017; Rosenblat 2018). Driving is seen as one form of work that will become automated, which has led to an overemphasis on the role of algorithmic management in this kind of work, following a broader pattern of discussing this topic throughout society (see Pasquale 2015; Kitchin 2017; O'Neil 2017; Turow 2017; Eubanks 2018).

Clearly, data collection is undertaken by platforms, and algorithms are being used to measure and supervise work. However, much less is known about how these are specifically used within the labor process, how effective they are, or how they are being challenged and contested. As I have argued elsewhere, discussions about algorithmic management risk overstating the power and development of these techniques (Woodcock 2020). There has been little critical research that has sought to understand these technologies within existing and transformed relations of production. This has led to claims that algorithmic control takes away the possibilities of work agency, solidarity, and collective action (Veen et al. 2019; Mahnkopf 2020), returning again to the arguments about this work being "unorganizable." Similarly, the research focus on data collection can mirror the platform's own marketing about their role as technology companies, rather than employers. Too often data is seen as an end in itself, whether as "the new oil" (Economist 2017) or as the platform's real purpose. Many of these claims are made from externally observing platforms—or indeed from reading the marketing material or promotion from platforms themselves. Instead of taking the collection of data for granted, this article seeks to return the focus to the practices of algorithmic management, particularly considering its limits.

The starting point for this is understanding how these technologies are used in the labor process, in this case by examining examples of transport platforms. This develops an argument previously put forward by myself and Englert et al. (2020) about "digital workerism," and the warning that with platform work, there is too frequently a focus on the technology at work, but little on the experience of work or the changing class composition involved. This builds on previous research about the "illusions" of algorithmic management at Deliveroo (Woodcock 2020). There is a growing body of literature that seeks to understand platforms from the workers' perspective (see, for example, Waters and Woodcock 2017; Fear 2018; Briziarelli 2019; Gent 2019; Cant 2019; Leonardi et al. 2019; Cant and Mogno 2020; Tassinari and Maccarrone 2020). No matter how complex the algorithms or how well developed the applications are, workers drive the vehicles, deliver food, clean houses, categorize data, and so on. The article begins by placing algorithmic management within the labor process. It moves on to consider the limits of algorithmic management and the problem of understanding data at work. It concludes by critiquing the emphasis on data in platform work, arguing for a return to the labor process and worker resistance.

Data and the Labor Process

Information has long played an important role in the supervision and management of work. From the first moment that labor power was purchased by capital, there has been a fear that the workers who came with that purchase may not work as hard as they could. This fear has become the obsession of management as a practice, as well as an academic discipline. For example, Taylor (1967) was motivated by his understanding of "soldiering" by workers, which he argued was "the greatest evil with which the working-people . . . are now afflicted." As I have argued elsewhere (Woodcock 2020), we can trace that line of thinking from the supervision of factories, developed through electronic surveillance in the call center (Woodcock 2017), and now with platform work. The importance of drawing attention to this historical lineage of supervision at work is to emphasize how management techniques with platform work are not an entirely novel phenomenon or departure from the past.

This managerial imperative to collect or steal knowledge from workers in the production process precedes the use of algorithms. While the digitalization of many of these processes has made this appear more explicit than before, the importance of information in the labor process has a long history. For example, Romano Alquati (quoted in Wright 2016, 114) argued that information has played two key roles in the capitalist organization of work. The first is in the form of "control information." This refers to the kind of information that the Taylorist managers were seeking to steal from workers on the factory floor (Braverman 1998). The second kind of information is that which "constitutes the collective legacy of the working class . . . productive information tout court." Rather than information used for control, it is the information created, shared, and used by workers during the production process. Through the labor process, capital attempts to transform this into something that can be exploited. Even on the assembly line, information played a key role in the production of commodities—whether through the understanding of how to cooperate in this way, monitoring materials and machinery, improving efficiency, and so on.

At first glance, platforms seem to have developed an impressive ability to collect data on the labor process. As Nick Srnicek (2017, 76) argues, work platforms are examples of "lean platforms" that "operate through a hyper-outsourced model, whereby workers are outsourced, fixed capital is outsourced, maintenance costs are outsourced, and training is outsourced. All that remains is a bare extractive minimum—control over the platform that enables a monopoly rent to be gained." Platforms are positioned between workers and the work in a way that allows for two important dynamics: first, the platforms can collect large quantities of information in the form of digital data; and second, because of the use of digital technologies that allow this collection to happen remotely, the platforms can obscure these data-collection processes. In the call center, the integration of the telephone and computer allowed for new methods of electronic surveillance. These were supplemented and enforced through the physical presence of managers (Woodcock 2017). In the case of transport platforms, capital has found a form of work that is particularly "digitally legible" (Woodcock and Graham 2019) and can be measured and monitored relatively easily in this way.

The Limits of Algorithmic Management

Transport and delivery provide clear start and end points, with opportunities to check the labor process at pickup and dropoff, with moments to involve customer ratings too. For example, with the food delivery platform Deliveroo, the labor process is precisely monitored and timed through a combination of worker interactions on a smartphone app, the integration of GPS, and confirmations from customers

(including reviews) and restaurants. It involves relatively discrete tasks that can be measured: Did the driver arrive at the correct time? Was the food ready? How long did the delivery take? Was the customer happy with the delivery? And so on. There are quantitative measures that can be taken across the labor process, with distinguishable points at which to take those measurements.

Drivers are aware of this collection of data, as well as its interpretation through algorithms, and implementation through a form of algorithmic management. Unlike at the call center, though, there are no supervisors looking over workers' shoulders. As Mumit, a Deliveroo driver in London, explains: "It's the algorithm that's the boss. . . . The algorithm has rules and we're the ones who, knowing that, the guys in the office are data driven, and we're the ones who make the data" (quoted in Woodcock 2020). The data being collected is, in Alquati's terms, "control information." This is information about how long tasks take, ensuring that drivers are not soldiering and that the pizza arrives before it has gone cold.

The development of this model of algorithmic management needs tobe understood in relation to the legal and regulatory framework within which platforms operate (Woodcock and Graham 2019). The current model of platform started from an attempt to outsource many of the costs of the labor process onto the individual worker. Instead of formally employing platform workers, the platforms engage them as self-employed independent contractors (see Aloisi 2016; De Stefano 2019; De Stefano and Aloisi 2019). Through this misclassification of workers, platforms can evade the protections and liabilities they would have to take on if they employed workers directly. While this model has proven to be effective for platforms so far, the freedom from these requirements also limits the interventions that platforms can legally make within the labor process. If platforms direct the labor process in the way they would with employees, they risk legal challenges for reclassification. If it were possible to use physical supervision, platforms would risk looking like employers. This would prevent the more obvious interventions, like calling workers in for disciplinary or performance improvement sessions, but also changes the language and way that plat - forms communicate with their workforce.

Algorithmic management develops from this constraint that capital faces when developing a platform model. Due to the use of bogus self-employ- ment statuses, the platform cannot directly tell workers to work harder. Instead, through Service Level Agreements (SLAs) and other forms of contracts, they can set targets for workers with the hope they will meet them. The directives of capital have been translated into algorithmic nudges, building on how these have been used in other contexts to "seduce, coerce, discipline, regulate and control: to guide and reshape how people . . . interact with and pass through various systems" (Kitchin 2017, 19). This provides a way for platforms to indirectly control the labor process. However, this is often supported by harsh disciplinary interventions—the "deactivation" or arbitrary sacking of workers. This has proven to be an effective way to manage platform workers for the majority of the time. One of the major weaknesses becomes clear when platform workers resist and engage in strike action. As there is only a minimal managerial layer in the company, there are limits to the kinds of interventions they are able to make. As I have argued elsewhere (Woodcock 2020), there are two kinds to precarity at Deliveroo. The first is the well-documented precariousness of working for Deliveroo, including the use of bogus self-employment status. The second is the precariousness of this arrangement for Deliveroo. While the methods of algorithmic management may prove cost effective, the practice of control is far from total, particularly when opposed by workers.

The Problem of Data at Work

Despite these challenges for using algorithmic and data-driven forms of management in platform work, much research has focused on the importance of data for making sense of it. It is understandable that academics writing on the platform economy have put so much emphasis on the role of data in platform work. Many academics work with data: it can be categorized, sorted, and compared. Workers' experience is a much more complicated, contradictory, and unpredictable factor. It has been widely written about that Uber's real aim is not to exploit drivers through bogus self-employment but, rather, to replace them with automated vehicles and extract rent from this driverless future. The problem with this claim is that it is hard to know if this will happen, and, if it does, how or when it will happen. Indeed, the claim has been challenged: Uber recently sold off its "autonomous vehicle division" (Economist 2020). Uber's claim—and, in effect, that of other platforms—is that they are not really involved in the dirty practices of exploiting workers, but just taking the data they generate to achieve a workerless future. Regardless of whether they will be able to successfully automate the entire labor process involved in passenger transportation, what happens with workers between now and then is still important in shaping that outcome.

Many of these claims have been reproduced in the literature: critical theory has been reapplied to "informational capitalism" (Fuchs 2010), and traditional management perspectives have yielded critiques of "surveillance capitalism" (Zuboff 2019). Sadowski (2019, 1) has argued that "data has become central and essential for increasingly more sectors of contemporary capitalism. . . . Just as we expect corporations to be profit-driven, we should now expect organisations to be data-driven." This draws a line between the old ways of doing things and the new age of data. However, it is worth digging into these claims a little further. For example, Sadowski (2019, 1) relies on Bourdieusian notions of social and cultural capital in arguing for "data as a form of capital." The problem with this argument is that neither social nor cultural "capital" is equivalent to economic capital in a Marxist sense (see Toscano and Woodcock 2015), and both are often used in ways that depart significantly from Bourdieu's (1984) writings. Just because something circulates does not make it capital. Understanding capital needs to also be about identifying how it can be overthrown.

We can examine this further by returning to Alquati's formulation of two different types of information. The work process of platform workers involves the extraction of data (van Doorn and Badger 2020). However, there is a question about what kinds of data are generated during the labor process. From the driver, there is GPS and timing information. Clearly, this is control information, used to attempt to manage workers. For example, if drivers take too long or choose an inefficient route, they can be nudged (or threatened with deactivation) into changing their behavior. Similarly, there is also data gathered about when and where drivers will work, how much they will accept for jobs, and so on. There is a potential use in training artificial intelligence involved in delivery, but the data is not that granular and is also specific to cyclists and mopeds as a form of transport. There is data generated by consumers: what are they ordering, when, how much will they pay, and so on. Deliveroo themselves has made a claim about how this could be useful in the future: "hyper-personalized [sic] food produced by Deliveroo; lower price of food; create daily use case; greater margin due to supply chain savings and automation" (Panja 2018). In an investor presentation, they claimed this could be used to lower the costs of an average order to only £1 for the food and £1 for delivery. At the time of the presentation in 2018, the average order was for £24.20 (Panja 2018). However, this is hardly a new phenomenon: companies measure their output, trying to lower costs through efficiencies and greater control of workers. There is little here in terms of the productive information that Alquati referred too.

The main demonstrable use of large-scale data has been with advertising. As has been well documented, the core business of Google and Facebook is selling advertising (Vaidhyanathan 2012, 26). This has entailed the collection of vast quantities of data on individuals, attempting to find more

precise ways to target advertising. Like the purchase of labor power, the history of advertising also involves a long-running fear for capitalists about getting what they have paid for. As the nineteenth-century retailer John Wanamaker remarked, "Half the money I spend on advertising is wasted, the trouble is I don't know which half" (quoted in Thompson 2014). Advertising is notoriously hard to measure. After all, advertising involves general brand awareness, as well as the purchasing of a specific commodity at a precise time. Or, as Raoul and Bonner (2019) have put it: "Advertising shits in your head." Google has faced criticism that they have used false reports to marketers using their services—casting doubt on how effective the huge amounts of money spent on this form of advertising are (Alba 2017). Similarly, one study suggested that there are "no measurable short-term benefits" of these kinds of advertising campaigns (Blake et al. 2014). As Thompson (2014) has argued, this has not solved Wanamaker's problem: "The Internet was supposed to tell us which ads work and which ads don't. Instead, it's flooded consumers' brains with reviews, comments, and other information that has diluted the power of advertising." The collection of data therefore provides an important potential avenue for capital to realize profits from the production of commodities. This has been, and remains, an important component of capitalism. If we take at face value the way that platforms (and many other organizations) are now promoting themselves as focusing on data, we can attribute a power to that data beyond its effect in the world. Indeed, as the examples above show, measuring the effects can be challenging in practice.

The Power of Data?

This article is intended as a provocation and critique of research on platform work that is overly focused on data and algorithms. This is not to argue that data and algorithms are not an important part of this work. Indeed, Uber has actively engaged in the academic debates, sharing data with Hall and Krueger (2017). Although this has been criticized for its lack of engagement with existing scholarship and methodological issues (see Berg and Johnston 2018), it shows the ideological use of data in winning arguments—both within academia and with policy makers. However, the pro-platform side of the debate has attempted to use data to obscure workers in the debate. By emphasizing data collection and surveillance critical researchers too risk losing sight of the limitations and weaknesses of the practices of algorithmic management at work.

One example of this has been the claims about access to data. Clearly, workers should have access to data they generate or that is generated about them while at work. In the project with a Deliveroo rider (Waters and Woodcock 2017), we attempt to collect data on the work process as part of the inquiry. This data should have already been accessible to them and other workers. However, the counter-collected data in that project did not uncover anything particularly novel. Instead, it highlighted the exploitation of the platform, the risks of the work, the low pay, and so on. These are features that platform workers are keenly aware of. There are two important implications that follow on from this argument. First, there are limits to the power of algorithmic management. This is both on its own terms—as a strategy of capital—and highlighted through worker resistance. Further research needs to draw attention to this. Second, there are limits to relying on data for the analysis, critique, and resistance to platform capitalism. At present, workers have little (if any) access to their work data. Getting access to that data would make it harder for capital to obscure the processes of supervision and control. It may also provide ways for workers to challenge the automated decisions made about them, for example. However, just gaining access to data will not give workers a lever for transforming platform work. As Marx ([1867] 1977: 344) once argued, when capital and labor confront each other as "an antinomy, right against right, both equally bearing the seal of the law of exchanges, . . . between equal rights force decides." Data may be used to highlight exploitation in platform work—or even illegal

practices—but between equal access to data, to paraphrase Marx, it will still be force that decides. On the workers' side, this does not have to mean physical force but can instead involve the development of new forms of collective, organized power in their own interests. The first seeds of this are sprouting in transport platform work. New ways to use data may well be generated from this organizing, finding new uses of data against and beyond capital. It is here that further research is urgently needed.

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