

Flexibility and freedom for whom?

Precarity, freedom and flexibility in on-demand food delivery

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ABSTRACT

On-demand delivery platforms appropriate 'freedom' and 'flexibility' discourses with claims such as 'be your own boss' and 'work as much as you want to'. During the COVID-19 pandemic, Deliveroo updated its courier platform application with a 'free login system' in Barcelona whereby platform couriers could connect to the platform whenever, wherever, and as often as they wanted to. In this paper, we ask why the introduction of a 'free login' system generated even more precarious forms of work, by comparing workforce management systems both before and during the COVID-19 period. We argue that the reason it becomes problematic is rooted in Deliveroo's business model, which is characterised by hiring on-demand, using a piece-rate payment and exercising hard workforce control through algorithmic management.

KEY WORDS

Deliveroo, flexibility, freedom, gig economy, labour process control, platform work

Introduction

The central argument most commonly used by platform companies is that platform work offers workers the ‘freedom’ and ‘flexibility’ to work whenever and wherever they want, becoming a source of income while positively contributing to platform workers’ work–life balance. While these discourses may sound attractive to governments focused on job creation, the jobs created are also symbolic of precarious work, and hence of deteriorating working conditions and labour standards (Standing, 2011; Zwick, 2017; Anwar & Graham, 2020; Schor et al., 2020).

Indeed, it is remarkable that an increasing interest in work and personal work-life balance has coincided with the emergence of the gig economy, a type of precarious work characterised by low pay, unstable employment and workers who are excluded from mainstream social protection (Schmidt, 2017; Zwick, 2017; De Stefano, 2018; ILO, 2018; Urzú Brancati, Pesole & Fernández-Macías, 2020), and which originated in the neoliberal economies (e.g. Edgell, Gottfried & Granter, 2015) and intensified from the 1990s onwards. In turn, the appearance of algorithmic management (AM) as a means of controlling the labour process is being increasingly highlighted as a reducer and constrainer of both the ‘freedom’ and ‘flexibility’ of platform workers (Rosenblat & Stark, 2016; Wood et al., 2019; Anwar & Graham, 2020). In other words, platform workers seem to have increased ‘flexibility’ and ‘freedom’ in a technical sense, but in practice scheduling their work and personal lives has become problematic (Anwar & Graham, 2020).

One sector that has gained important academic and public attention is the delivery sector. In particular, the on-demand food delivery company Deliveroo has been acknowledged, alongside Uber, as an important pioneer in the introduction of a new workforce model whose existence depends on new technologies (Rosenblat & Stark, 2016). Since its start-up, Deliveroo has claimed to offer its platform couriers, so-called ‘riders’, important benefits in terms of ‘freedom’ and ‘flexibility’. Claims such as ‘be your own boss’, ‘work as much as you want to’ or ‘you choose when you deliver’ became part of its organisational culture. However, such claims have been widely contested by an important variety of stakeholders, including researchers, unionists and workers themselves (Zwick, 2017; De Stefano, 2018; Cant, 2020). In particular, Deliveroo has been accused of degrading labour rights and working conditions through a misrecognition strategy that functions thanks to a false discourse of ‘entrepreneurship’, ‘freedom’, and ‘flexibility’ (Cant, 2020).

As a result of these accusations, that threaten the core of its business model, in March 2020, during the COVID-19 pandemic, Deliveroo in Barcelona introduced an app update that enabled platform couriers to connect to their mobile app whenever, wherever, and as much as they wanted to. However, instead of improving platform couriers’ freedom and flexibility, this ended up generating even more precarious forms of work. This paper aims to analyse why the introduction of a ‘free login’ system generated even more instability and insecurity at work. To do so, we analyse and compare both workforce management systems before and during the COVID-19 period. We argue that the reason the new system became problematic is rooted in Deliveroo’s business model, which is

characterised by hiring on-demand, using a piece-rate system and the exercise of workforce control through algorithmic management.

This paper contributes to four different bodies of literature. First, it contributes to the literature on the reliance on algorithms to manage and control workers (e.g. Lee et al., 2015; Rosenblat & Stark, 2016; Sun, 2019; Van Doorn, 2020). Departing from the insights of previous studies, we consider the algorithmic management system (AM) as a key means of controlling the labour process and workers' experiences (Lee et al., 2015; Rosenblat & Stark, 2016; Ivanova et al., 2018; Veen, Barratt & Goods, 2019; Wood et al., 2019). However, we also show that AM is neither a neutral technology nor a characteristic sufficient to provide an understanding of labour control at Deliveroo, but is part of a complex organisational structure in which different means are deployed to secure control, including taking advantage of platform workers' economic dependency (Bucher, 2018; Veen, Barratt & Goods, 2019; Moore & Joyce, 2020; Galière, 2020; Schor et al., 2020).

Second, the paper also informs a scarce but important body of literature on the flexibility and freedom of platform work. In the case of Deliveroo, despite being the most studied on-demand food delivery platform, no critical assessment of the 'flexibility' and 'freedom' of its platform workers has been developed. Anwar and Graham (2020) used a case study of the Upwork platform to critically analyse the assumption that 'gig work offers workers the "freedom" and "flexibility" to work whenever and wherever they want' by exploring the concepts of 'precarity' and 'vulnerability'. Another case study comparing the ability of workers on three online platforms (Mechanical Turk, MobileWorks, and CloudFactory) to control their time found that this was diminished by structural and cultural-cognitive constraints (Lehdonvirta, 2018). In Wood et al.'s (2019) paper, AM was found to influence workers' autonomy, flexibility and power. Since flexibility may have different impacts according to workers' individual characteristics (e.g. gender) as well as organisational design (Lehdonvirta, 2018; Anwar & Graham, 2020), among other factors, a deeper study of the influence of workforce management systems on platform workers' 'flexibility' and 'freedom' is needed.

Third, by examining the working conditions of platform workers (e.g. De Stefano, 2016; Zwick, 2017; Ivanova et al., 2018; Altenried, 2019; Cant, 2020; Urzì Brancati, Pesole & Fernández-Macías, 2020), we contribute to studies about platform work and precarious work, both of which are still under-theorised (Scholz, 2016; Ravenelle, 2019; Schor et al., 2020). We do so while also contributing to the still sparse literature on the impact of the COVID-19 pandemic on platform workers' working conditions (Rani & Dhir, 2020; Umer, 2021). Finally, being aware of the heterogeneity of platform workers' market situations, this paper contributes to an increasing body of literature that emphasises that workers' experiences not only differ within platforms but also across them, which signals that levels of control vary among platforms (Lehdonvirta, 2018; Anwar & Graham, 2020; Schor et al., 2020).

The paper opens with a section that turns a critical eye on 'flexibility' and 'freedom' discourses while citing key literature on the role of different stakeholders in shaping workplace flexibility and the role of neoliberalisation in freedom discourses. The impacts of digital technologies on flexibilisation, surveillance and labour control are

then introduced. Following this, the interaction of new technologies within a context marked by neoliberalism and precarisation and the role organisations play are analysed. We then present the case of Deliveroo, explaining its workforce management models and systems of control. In particular, we focus on the AM and piece-rate systems and the role they play in shaping flexibility and freedom. Among other observations, we conclude that, if workplace flexibility is only orientated to cover companies' needs, impacting negatively on couriers' working conditions, or only occasionally benefitting them, workplace flexibility is clearly a management-orientated concept. Finally, drawing attention to misrecognition strategies and seeking a means of counterbalancing them, we argue that working time should be defined as the period in which platform couriers are available to the platform – not just the period when they are actually engaged in delivery work.

Neoliberalism and its connection with 'flexibility' and 'freedom' discourses

The imprecise debate around 'flexibility' and 'freedom' did not emerge only with platform work.

Neither did the rhetoric that workers no longer want a 9-to-5 job and that flexible jobs may offer opportunities especially for women to combine paid work with reproductive labour (Huws, Hurstfield & Holtmaat, 1989). These assumptions, which were drawn, in part, from the women's movement of the 1960s and 1970s, assume that there is a win-win relationship between employers and workers, but this is rarely the case (ibid.). Indeed, since the early 1980s, management strategies and labour market restructuring have been legitimised by the imprecise definition of flexibility (Pollert, 1988). In particular, in response to economic recession, labour market deregulation – including changing working practices such as shift work – was used to raise production, but at the expense of labour and human rights (ibid.).

Platform companies' flexibility discourses that postulate that platform work contributes to an increased work-life balance disregard the fact that platform workers' flexibility and individual freedom occurs in a context marked by an upsurge in contingent employment relations (Beck, 2000; Harvey, 2005; Burchell, 2009; Anwar & Graham, 2020). In this regard, both 'flexibility' and 'freedom' are ubiquitous notions whose meanings shift according to whether they are viewed from a management or worker perspective (Pollert, 1988; Gouliquer, 2000; Hill et al., 2008; Anwar & Graham, 2020).

In the platform economy, 'flexibility' is a widely-used concept that refers both to workers' flexibility and labour flexibility for companies (Anwar & Graham, 2020). On the one hand, from the organisational perspective, the goal of integrating flexibility is said to enable adaptation to a rapidly changing market (Pollert, 1988; Gouliquer, 2000; Hill et al., 2008). On the other, from the worker perspective, flexibility is 'the ability of workers to make choices influencing when, where and for how long they engage in work-related tasks' (Hill et al., 2008: 152).

Similarly to the notion of 'flexibility', what is regarded as 'free' may also have different meanings for firms and workers. To workers, freedom is understood as 'freedom to choose employers, jobs, working hours and place of work' (Anwar &

Graham, 2020: 4). However, this definition of freedom, detached from freedom of association and collective bargaining, is rooted in neoliberal beliefs and diminishes workers' ability to control their wages and working hours (Harvey, 2005; Neff, 2012; Anwar & Graham, 2020). In particular, neoliberalism has obscured the concept of 'freedom' to such an extent that political claims associated with reducing state functions and collective action to the minimal have been normalised (Harvey, 2005; Holborow, 2015; De Stefano, 2016; Anwar & Graham, 2020).

In sum, despite 'freedom' and 'flexibility' being common terms, ambiguity exists regarding their definitions in relation to the platform economy. In this paper we refer to 'freedom' and 'flexibility' in relation to how workers influence when, where and for how long they engage in platform work.

Digital technologies and their connection to flexibilisation, surveillance and labour control

Today, with the emergence of ICTs, managers have found it profitable to allow workers to work from home or in other spaces without direct supervision (Fagan et al., 2012). New technologies have also enabled companies to split work into gigs, tasks or microtasks and, in a matter of seconds, assign them to a person willing to take them on (Ginès, 2021). This may mean that workers have more autonomy to choose what they would like to work on, when and how much (Lehdonvirta, 2018; Ginès, 2021).

Splitting work into tasks and finding workers in real time with such an unprecedented precision also incentivises on-demand platform companies, based on crowdsourcing, to have as many workers as possible willing to perform the tasks available on the platform (Rosenblat & Stark, 2016; Wood et al., 2019; Ginès, 2021). For this reason, platforms have taken advantage of new technologies to introduce systems of surge pricing and algorithmic control designed to discriminate among workers and tasks (Lee et al., 2015; Rosenblat & Stark, 2016; Sun, 2019). For instance, they may pay more to workers who are available during high-demand hours or to workers who do not reject tasks, penalising workers by affecting the type and number of future tasks available to them or even expelling them from the platform (Lee et al., 2015; Rosenblat & Stark, 2016; Sun, 2019; Kellogg, Valentine & Christin, 2020). In short, AM systems can be designed to incentivise workers to behave according to companies' requirements, diminishing their 'autonomy', 'flexibility' and 'freedom' while increasing precariousness (Lee et al., 2015; Rosenblat & Stark, 2016; Ivanova et al., 2018; Wood et al., 2019).

ICTs have allowed an increased 'flexibilisation' of jobs around the four fundamental dimensions of the labour process (space, work, employment and time) (Benner, 2002, 2006). Notwithstanding this, under capitalism, the underlying purpose of the design of the labour process remains the same: to obtain financial returns and generate more value from workers than the value returned to them in the form of wages, which incentivises managers to control the labour process and exploit workers (Marx & Scaron, 1975; Edwards, 1986; Graziani, 2008; Fagan et al., 2012). Under industrial capitalism, the factory system enabled the introduction of the production chain, which required workers to be tightly controlled under the direct sight of managers (Marx & Scaron, 1975). Likewise, AM is the main means of workforce control in these platforms

(Lee et al., 2015; Rosenblat & Stark, 2016; Ivanova et al., 2018; Wood et al., 2019) and without it the business model of these platform companies would not be possible (Ginès, 2021). However, it is important not to fall into technological determinism and consider that workplace control is not only exercised through technological enablements (Shanahan & Smith, 2020; Schor et al., 2020).

The power imbalance: new technologies in a context marked by precarisation

Analysis of the impacts of new technologies such as AM on flexibility and freedom in the platform economy should consider that the current socioeconomic context has been marked by an increased neoliberalisation of the economy (Burawoy, 1979; Beck, 2000; Standing, 2011), exacerbating the power imbalance between employers and workers and contributing to increasingly stringent labour control. In particular, the growth of gig work and the casualisation of employment relationships has led to increased transfer of employer risk to the worker, more job rotation, lower wages, and less job security (De Stefano, 2016; Fleming, 2017; Zwick, 2017; Anwar & Graham, 2020).

Because well-known platform companies follow misrecognition strategies, they have little obligation to their self-employed workers, can pay them less, and have the authority to fire them on the spot without justification (Wood, 2017; McGaughey, 2018; van Doorn, 2017; Zwick, 2017). For instance, under this employment model, it does not matter if the platform guarantees work or if it pushes hyper-competition among workers because workers are only paid for the tasks performed and are not paid for the time they are available to the platform (e.g. Ginès, 2021).

The combination of this long-standing trend with the emergence of digital technologies blurs the aspects that are part of a new labour regime from the ones that are not, and makes it difficult to distinguish new from old labour management strategies (van Doorn, 2017; Schor et al., 2020). This makes it increasingly important to consider how the interaction of technologies with socio-political institutions, management ideologies and power relations gives shape to these algorithms and the workforce management systems of platforms (Bucher, 2018; Benkler, 2019; Thomas, McArdle & Saundry, 2020).

Another important aspect to consider is that although workers as a group are in a power imbalance in respect to their employers, workers are embedded in different socio-political landscapes, involving different degrees of precariousness, which in turn will affect their experience of work (Wood, 2017; Anwar & Graham, 2020; Milkman et al., 2020; Schor et al., 2020; Hoang, Blank & Quan-Hasse, 2020). For example, white working-class women have been found to feel emotionally rewarded when serving elderly and disabled customers who cannot easily shop for themselves and engage in the food delivery sector because they perceive platform work as something that facilitates family care (Milkman et al., 2020).

However, recent research also postulates that workers' experiences do not only differ within platforms but also among them (Schor et al., 2020). Thus, different platforms may have different time management practices of their own, which can further influence workers' flexibility (Anwar & Graham, 2020). In this paper, without

doubting that workers' experiences of platform work differ within platforms, we argue that there are nevertheless certain aspects of working conditions that escape the algorithmic management system, such as a reduction in pay rates that affect all workers, negatively diminishing their freedom and flexibility.

The role of organisational design and its impacts in terms of 'flexibility', 'freedom' and 'precarisation'

Perhaps not surprisingly, control has been a major theme in the labour process literature as well as those of organisational research (Fagan et al., 2012: 207). Organisations play an important role in mediating the relationship between work–life balance policies and individual behaviours (Bessa & Tomlinson, 2017; Edgell, Gottfried & Granter, 2015; Lehdonvirta, 2018). Flexible Work Arrangements (FWAs) – understood as changing shifts, breaks or overtime; flexitime; individual time accounts; sabbaticals; long-leave arrangements; opportunities to adjust start and finish times; job-sharing or homeworking – can be employer or worker-orientated (Hill et al., 2008; Fagan et al., 2012; Edgell, Gottfried & Granter, 2015). Giving workers a degree of autonomy and control over their working hours may have a positive effect on work–life balance (ILO, 2007; Fagan et al., 2012; Wood et al., 2019). However, FWAs may also become a means of securing flexibility for employers if used to obtain longer hours from employees when needed (Fagan et al., 2012; Heyes, 1997; Lambert, 2008; Price, 2016; Wood, 2016, 2017; ILO, 2019).

Companies use complex and obscure strategies to gain control over workers (Wilmot, 1993; Wood, 2017; Shanahan & Smith, 2020) and align FWAs towards their interests (Fagan et al., 2012; Wood, 2016; Wood, 2017). The structural and technological design of certain platforms has been found to contribute to loneliness and social isolation, high work intensity, non-payment of wages and unfair dismissal (Anwar & Graham, 2020: 17). In this sense, Lehdonvirta (2018) emphasised that platforms differ in the way they regulate how the demand is divided among platform workers and that institutions produce conflicting effects by introducing formal constraints on workers' control over scheduling while acting as support structures to help workers overcome cultural constraints (Lehdonvirta, 2018: 5). Platforms also take advantage of the economic dependency of workers on the job – due to the lack of alternatives in the labour market – which is a key alternative disciplinary device for labour control (Schor et al., 2020).

Therefore, each platform is different and managers play a key role in shaping workers' 'freedom' and 'flexibility' as well as in shaping 'explicit and implicit forms of precarisation' (Alberti et al., 2018; Graham & Anwar, 2020). Although the most studied platform companies correspond to a platform model characterised by the erosion of working rights and hyper-outsourcing (Srnicek, 2017; Fuster Morell, Espelt & Renau Cano, 2020) and are more aligned to manager-orientated flexibility, not all of them are the same. In the platform economy different models coexist, with different impacts (Laukkanen & Tura, 2020; Fuster Morell, Espelt & Renau Cano, 2020). For instance, the use of AM and gamification techniques among cooperative platforms is very different from the use made of these devices by platforms such as Deliveroo (Fuster Morell, Espelt & Renau Cano, 2020).

Studying the pitfalls of the platform's labour process may help to develop strategies to design organisations that strengthen, rather than merely triggering, the flexibility and freedom of platform workers. In this paper, we aim to contribute to this with a case study of Deliveroo. In doing so, we focus on the impacts of the workforce management systems rather than who is ultimately in control, concurring with Lehdonvirta (2018). We do this not because we consider that there are cognitive limitations on the part of workers, but because of companies' complex and obscure strategies to gain control (Wood, 2017; Shanahan & Smith, 2020).

Methodology, recruitment methods and sample composition

The research presented in this paper is based on fifteen interviews conducted before and during the COVID-19 pandemic outbreak in Barcelona (from January 2020 to July 2020). Following a snowball sampling strategy, we began to get in touch with actors with whom we had a close relationship to ask them for help in finding potential interviewees. This led to very poor results: just one interviewee was contacted thanks to this initial process. To overcome this obstacle, we reached out (by email and by phone) to the main associations in favour of securing platform couriers recognition as self-employed workers. After prolonged discussion, we managed to build trust and convince the platform couriers to participate; this gave us better results. Fortunately, most of these initial participants had connections with many other couriers, which helped us to deploy a snowball sampling strategy. Later, to increase the diversity of the sample and ensure that platform couriers in favour of being recognised as self-employed were not overrepresented, we approached platform couriers directly in the street and asked them to participate. When the COVID-19 situation started to affect Spain, we had already performed most of the interviews included in this study (11 out of 15). However, to include the impact of COVID-19 we continued regular contact with Deliveroo couriers until November 2020.

The average age of the interviewees was 33, six of whom were women and nine men. Most interviewees were not from Spain (only five out of the fifteen). Five out of the fifteen were from South America (one from Peru; two from Venezuela; two from Colombia), four from Belgium and one from Morocco. Ten out of the fifteen participants were single and most had pursued post-secondary education (eleven out of the fifteen) (three out of the fifteen had professional qualifications; six with a Bachelor's; one with a Master's degree; and one with a PhD). Two of the fifteen had finished compulsory education and one had not. Most had previous experience as workers in the platform economy (nine out of the fifteen). For most of the respondents, Deliveroo was their main source of income, but they combined Deliveroo with other platforms. Due to this multi-apping, it was difficult to differentiate the hours that they devoted to Deliveroo from the ones when they were working as couriers for other platforms. However, most of the interviewees stated that Deliveroo was the platform that offered them the best working conditions. On average, platform couriers had been working with Deliveroo for 25 months, but this varied considerably, from a minimum of four months to a maximum of five years.

The case of Deliveroo in Barcelona

Deliveroo – founded in London in 2013 by William Shu – is an on-demand food delivery company that operates in thirteen countries with over 50,000 platform couriers, mostly known as ‘riders’, who deliver orders from 50,000 restaurants in over 200 cities. Since Deliveroo arrived in Barcelona in 2015, its expansion has been accompanied by platform couriers’ protests about social and labour law conflicts and the subsequent political response.

During the months marked by strict lockdowns and social distancing measures, the on-demand food delivery sector became one of the few means by which restaurants without their own delivery services could operate. This led to major economic gains for food delivery platforms, which positioned themselves as one of the sectors to benefit most from the pandemic (EFE, 2020; Gispert, 2020).

During the first lockdown, beginning in mid-March 2020, Deliveroo introduced what it called a ‘free login’ system. This new system, which was still active at the time of writing this paper, allows couriers to connect to the platform whenever, wherever, and as much as they want to. This system was one of the main changes called for by the interviewees before the lockdown. During the first weeks of its implementation, couriers celebrated the change, but, eventually, the disadvantages outweighed the advantages. In particular, couriers complained about a considerable reduction in the number of deliveries and piece-rate payments that forced them to work longer hours.

Since their working conditions had deteriorated and their ‘flexibility’ and ‘freedom’ were lower, it could be deduced that giving the workers increased control and autonomy – understood as full-time control – was not a good idea. In the following section, we explain the two workforce management models used prior to and during the COVID-19 pandemic outbreak. We then go on to summarise the main complementary means by which Deliveroo exercises control over its couriers while shedding light on the main reasons for the reduction in their ‘flexibility’ and ‘freedom’ since the introduction of the ‘free login’ system.

The two workforce management models: prior to versus during COVID-19

At the beginning of 2020, before the COVID-19 pandemic outbreak in Europe, every Monday the Deliveroo couriers had to select their schedule for a whole week, two weeks ahead of time. However, the couriers made their selections at different times – 11 am, 3 pm or 5 pm – according to their rating and their seniority. Ratings were based on four pre-established requirements.

The first of these was the percentage of booked sessions attended by the courier. The rating did not drop if the courier notified Deliveroo at least 24 hours before the session that they would not be able to attend. However, if they were not able to attend a pre-booked slot – no matter for what reason – Deliveroo would not grant them the option of working in another time slot for that week.

The second requirement related to the percentage of pre-booked sessions not cancelled by the courier before the 24-hour cut-off.

The third related to the number of high-demand time slots – Friday, Saturday and Sunday from 9 pm to 11 pm – during which the courier had connected to the platform over the previous two weeks.

Finally, platform couriers recognised as economically self-employed (TRADE) had priority booking.

Each courier then had the option to pre-select – among the hours available – when they would like to work. There was also an option to automatically pre-select which hours to work, to avoid having to choose them manually each week. Notwithstanding, the final timetable was always double-checked by Deliveroo, which could approve or deny couriers' requests. In this model, there was also a maximum of 40 hours that platform couriers could book. They could, however, work extra hours not previously booked by 'catching some hours' if Deliveroo offered this option.

High-demand zones were indicated on the map with white spots (Figure 1). Couriers also had to start the session in the geographical area assigned to them; in the image below, for instance, it was 'BCV'. Pay rates established a minimum plus a variable amount based on distance. The amount also varied according to whether the courier delivered on a motorbike or an (e)bike, or if the platform offered bonuses for bad weather.

By contrast, the workforce management system used during the COVID-19 pandemic, named 'free login', gave workers the technical ability to connect more freely in terms of time and space. Deliveroo explained the change to their couriers in an email, several weeks after it was introduced:

A few weeks ago we introduced a free connection system that allows you to log in whenever and wherever you want with complete flexibility. The best times to go online and receive the largest number of orders are [. . .] high-demand [hours].

In particular, the new system removed previous requirements made of couriers, such as pre-booking timetables, having to work during high-demand hours and not pre-booking more than 40 hours per week, among others. Under this new model, Deliveroo incentivised couriers to work in certain zones at certain hours by increasing the pay rate with the addition of bonuses (Figure 2). By using these bonuses, Deliveroo signalled its intention to better compensate for long-distance deliveries (Figure 3).

According to Deliveroo, average earnings per hour during high-demand hours were 70% higher than at low-demand hours. In the same email, the company explained the introduction of a coloured map, updated every five minutes, that complemented the use of bonuses by differentiating between high, low and moderate demand zones in white (Figures 3 and 4).

In this model, platform couriers were not assigned a specific zone in which they were obliged to log in. Instead, couriers could, in principle, decide to log in wherever they wanted. Nevertheless, this did not mean that they had the certainty that they could start working at the moment they wanted; if it were the case that Deliveroo considered that zone to be full, the courier could not log in. The image below is a screenshot made by a platform courier when this happened: the message says 'Session could not be started. There are no free spots. To see availability in nearby zones click "Change Zone"' (Figure 5).

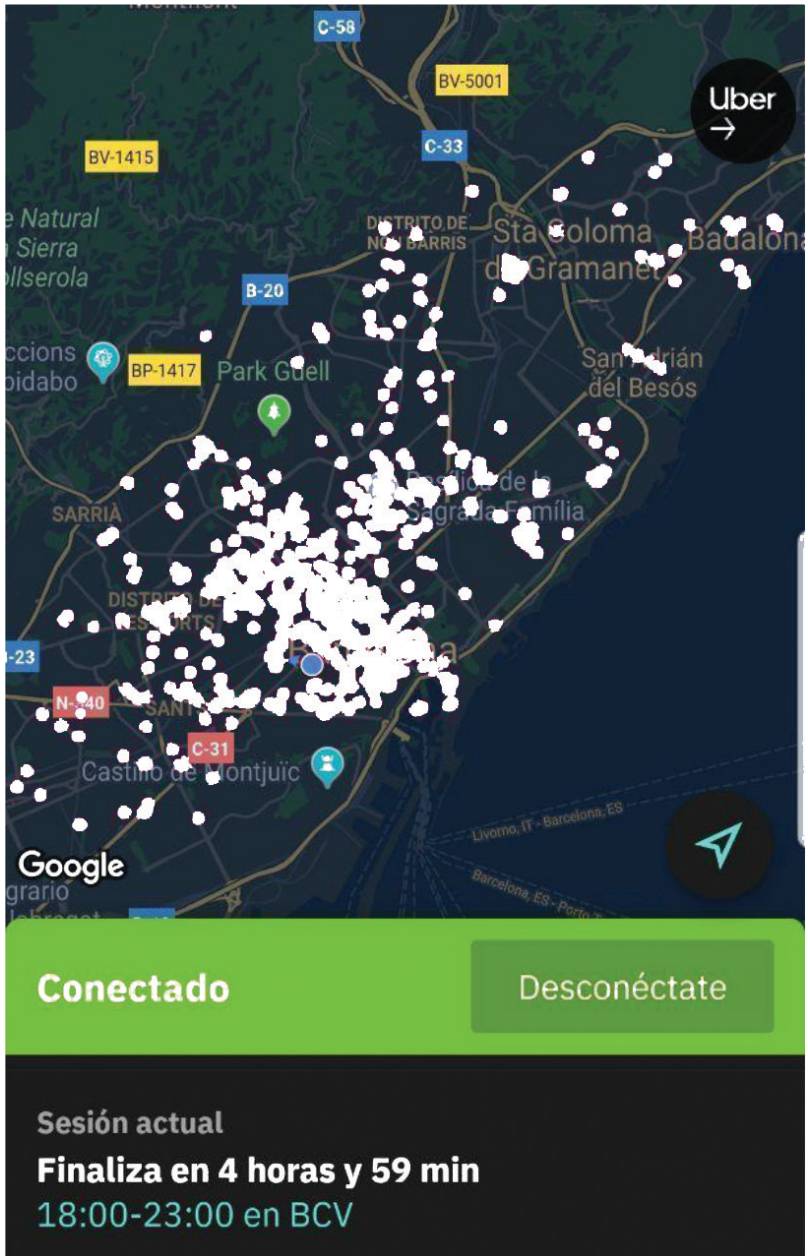


Figure 1: Scheduling model prior to COVID-19 outbreak. Map showing high-demand zones.



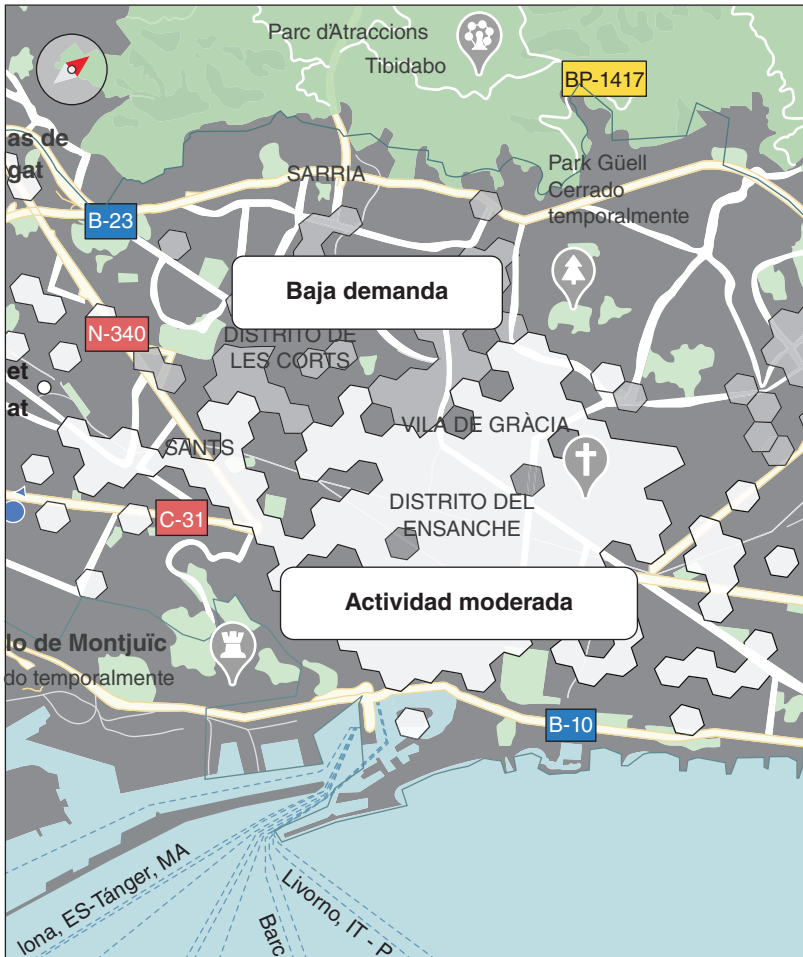
Figure 2: Deliveroo ‘special bonuses’ per delivery.

The system of control and its impacts on platform couriers’ workplace flexibility and freedom

The price tag of increased freedom and flexibility

An important aspect mentioned in the literature is that increased freedom and flexibility for platform workers comes accompanied by lower incomes and increased insecurity. For instance, in a widely known case study of Uber drivers, it was stated: ‘Drivers have the freedom to drive at “flexible” hours at lower rates, but their flexibility is tailored to and dependent on demand as well as on the viability of base rates’ (Rosenblat & Stark, 2016: 3764).

For this reason and although we only had available data for ten interviewees, we considered whether there could be a relationship between average working hours and



Figures 3 and 4: Pandemic model during COVID-19: map showing demand zones.

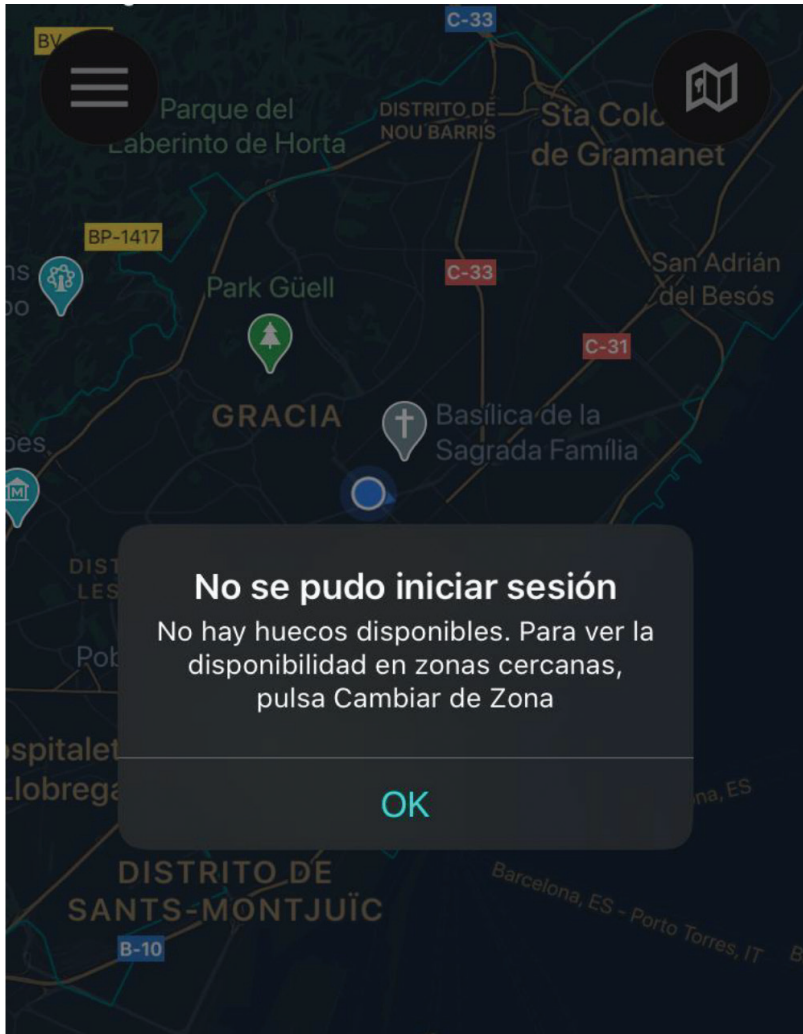


Figure 5: Impossibility to log in in a certain zone.

income. Couriers stated that they worked an average of 166 hours per month or 41 hours per week (the interval ranges from 24 to 300 hours per month). Four were working less than 40 hours, but only one worked what could be considered part-time (22 hours per week). The four couriers interviewed who worked under 40 hours a week averaged an hourly rate of €8.59, while their counterparts who worked more than 40 hours averaged €10.33. However, there were also hierarchies among the latter group, with those working less than 50 hours earning an average of €9.76, slightly less than the average hourly rate of those who exceeded 50 hours (€11.51 per hour).

Already these data suggest that the proclaimed ‘full flexibility’ is false: couriers who decide to work fewer hours must renounce income to do so, not only in the total amount of earnings that inevitably comes with part-time positions but in their average income per hour. Departing from the fact that hourly wages vary among couriers, the logical next question, addressed in the next section, is according to which criterion this pay rate is calculated and how this has changed with the introduction of the ‘free login’ system.

The black box: exploitative rules and norms embedded in the algorithm

It is reasonable to suppose that the payment system would have improved with the introduction of the new workforce management system. However, our interviewees indicated the contrary. When asked about the frequency of hours that were not economically profitable – those in which the platform couriers are available without receiving any requests – one participant answered:

Before it was very, very rare. Every hour there was work. You took an hour and there was work no matter what. It was one in a hundred who didn't . . . Maybe I'm exaggerating, but 100 per cent of the hours there was work. (Cristian, male, 28 years old)

This brings us to ‘Frank’, Deliveroo’s order machine learning-based distribution algorithm designed to reduce delivery times and increase the number of deliveries completed per hour (Shead, 2017). ‘Frank’ allocates the orders among platform couriers to maximise the number of deliveries performed by reducing the delivery time as much as possible. Deliveroo does not publicly state the variables used to determine how much couriers will be paid but does refer to six factors that affect delivery times: the specific dish being prepared; the location of the restaurant; the time of day and day of the week; the number of riders on the road; the number of live customer orders; and the distance from the restaurant to the customer.

Two main things can be gleaned from the information on the Deliveroo website (Deliveroo, 2018): first, to reduce delivery times, Deliveroo has an inherent incentive to have as many couriers as possible on the roads; and second, the shorter the distance between the courier and the restaurant and the final customer, the better. But not all customers live in the city centre, and not all restaurants are located in the centre, so someone has to take those orders. If couriers were paid well for long-distance orders, they would not aim for the maximum number of deliveries per hour. Why hurry if the pay rate is already good? On the other hand, if couriers are penalised for rejecting orders and paid poorly per delivery, then they have an incentive to go as fast as they can to compensate for ‘the lost time’, and even put in extra hours, enabling Deliveroo to maximise the number of deliveries made per unit of time:

Nobody knows why they pay you the way they pay you, because sometimes they pay you very well, and other times very badly. So it's weird. I don't understand how they validate it, what criteria they use. They send you to hell and pay you €3.90 when that order should earn you five euros. (Sergio, male, 34 years old)

The following appears in the same Deliveroo blog post:

Frank is designed to create the best overall delivery solution. It offers orders to riders based on their live location and the estimated travel time to the restaurant. At certain times and places, different vehicles may be given delivery priority – for example, if there is a longer delivery distance a scooter or car may be more suited to the order. (Deliveroo, 2018)

This implies that, although in theory couriers are free to choose the vehicle they use to deliver, in practice, the chances of getting deliveries are different depending on the vehicle used. This was mentioned during the interviews and was a key factor to consider when deciding which vehicle to use:

I don't know if this is still the case, but with the normal bike, we got fewer orders. The order distribution system sent the orders to the electric bikes first and we were waiting for an order for two hours until a guy [from Deliveroo's office] told us, 'Look, [. . .] register as electric and you'll have more again'. (Maria, female, 30 years old)

Before the introduction of Deliveroo's COVID-19 workforce management model, the platform workers' workplace flexibility and freedom were partly established according to a set of public parameters¹ that determined their access to time slots. With the introduction of the 'free login' system, time slots disappeared. However, this does not imply that the 'Frank' algorithm also did so. All the platform couriers interviewed considered that they had no clear information on the workings of the AM system. In other words, they did not know whether the 'Frank' algorithm had changed with the introduction of the 'free login' system.

The 'black-boxing' of the 'Frank' algorithm involves wide information and power asymmetry, leaving platform workers in a highly vulnerable situation (Rossiter, 2016). The small amount of data Deliveroo has published on its website enables us to state that the main aim of Deliveroo's order distribution algorithm 'to reduce delivery times and maximise the number of deliveries per hour' implies an incentive to reduce the distance between the courier and the restaurant and the final customer.

Nevertheless, how Deliveroo reduces this time and how this, in turn, impacts platform couriers' flexibility and freedom transcends its 'Frank' distribution algorithm. In the following section, we explain how the new model is accompanied by a set of measures not directly related to the AM system that produce negative impacts on couriers' freedom and flexibility.

Beyond the black box: the impact of piece-rates, unpaid available time and massive hiring campaigns

Deliveroo knows the number of couriers that are on the streets, the average time taken by each partner to complete a task, how many food orders are being prepared, whether

1 (1) Percentage of booked sessions attended by the courier. The rating did not drop if the courier notified Deliveroo at least 24 hours before the session that they would not be able to attend. However, if they were not able to attend a pre-booked slot – no matter the reason – Deliveroo would not grant them the option of working in another time slot for that week. (2) Percentage of pre-booked sessions not cancelled by the courier before the 24 hour cut-off. (3) Number of high-demand time slots – Friday, Saturday and Sunday from 9 pm to 11 pm – during which the courier had connected to the platform over the previous two weeks. (4) Platform couriers recognised as economically self-employed (TRADE) had priority booking.

the next order is going to be worse or better, while the couriers do not. Couriers must decide what to do based only on the information that Deliveroo decides to give them. As stated in the previous section, this wide information asymmetry leaves platform couriers in a very weak position. Thus platform couriers are in a vulnerable situation because of the lack of data transparency and the black-boxing of the AM system.

Equally important is that the couriers do not have a say in the payment system which determines, not only how much they are paid per delivery, but also which activities are paid (e.g. Rosenblat & Stark, 2016; Veen, Barratt & Goods, 2019). In this regard, the introduction of the new workforce management system increased the amount of non-paid time. Under the new system, for platform couriers to gain access to tasks, they had to be as close as possible to the pick-up point in both time and distance terms for each delivery.

Now if orders come in, it is because we are passing through the door of the restaurants. Therefore, Deliveroo does not pay for one-way trips to restaurants. They could put the orders on the way to the restaurants, but no, they give them when we are at the door, with two or three minutes to go for the delivery. (Laura, female, 29 years old)

However, it is because waiting time is not paid that the company finds this profitable:

Honestly, the colours [on the map signalling the level of activity] are useless because even when there is a lot of activity you can spend 40 minutes without an order, before they gave you one after another, even rejecting. I'm saying that we only get orders if we are a street or two from the restaurant. Therefore, from the last client's house to the next restaurant, it is a journey that they do not pay. In reality, in this way, we only get paid from the restaurant to the customer's home. And obviously, for us to have orders, we need to stand almost in front of the restaurants and to have the luck that the delivery is almost ready when you pass through . . . So you have to be moving all the time, for which they don't pay you. [. . .] I just worked two hours, I only received an order for less than 4 euros, a far cry from the 10–12 euros that they always promise publicly. (Maria, female, 30 years old)

In addition to a reduction in payment resulting from an increase in unpaid travelled distance per delivery, Deliveroo also reduced the minimum payment per delivery from €3.90 to €2.90 and engaged in major onboarding campaigns that increased the size of the workforce and thereby reduced the number of deliveries available per courier:

There is no work. There are so many of us with the free login that even when there are supposed to be orders, there aren't any. But we already know why this is the case . . . We are too many couriers, since we are free, they do not care if they have 20 couriers or 200. And the more the better because by doing so they make sure to pay the minimum. (Maria, female, 30 years old)

Conclusion

Deliveroo is a multi-billion dollar company that is more than doubling its size every year in a sector where there are still a lot of possibilities for digitalisation. In other words, Deliveroo has already disrupted the food sector, but this disruption, as its recent IPO suggests, is only in its early stages. More importantly, the platformisation of the

economy, of which Deliveroo is part of the tip of the iceberg, is escalating as a sector and a public policy field (Huws et al., 2018; Kenney & Zysman, 2016; Scholz, 2016; Schor et al., 2020; Huws, 2020).

Deliveroo, like other platform companies, states that its algorithms are the secret recipe behind its success. Other recent research, similarly, concludes that AM is the main factor limiting the autonomy of platform workers (Rosenblat & Stark, 2016; Anwar & Graham, 2020). In this paper, without denying the crucial role algorithms play, we argue that labour control is embedded in a much larger environment, and thus, the AM system alone is not sufficient by itself to exert control over workers (Bucher, 2018; Veen, Barrat & Goods, 2019; van Doom & Cheng, 2020).

As we have shown, the 'Frank' order distribution machine learning algorithm is designed to diminish delivery times and maximise orders made per hour. In this regard, Deliveroo's lack of transparency over its algorithm and what it does with its data (Rosenblat & Stark, 2016; Veen, Barrat & Goods, 2019) affects workers' flexibility and freedom, leaving platform workers in a highly vulnerable situation. The AM system is not the only cause of this, however. It is Deliveroo who decides the payment per delivery, the bonuses, if it pays for waiting times or how many platform couriers are available at any specific moment.

It is said by platform companies that, by enabling workers to connect and disconnect freely, their workplace flexibility will increase. However, the problem is that giving the workers the ability to decide when to connect and disconnect from the platform did not actually increase their control over the labour process and thus was not sufficient to increase the workers' workplace flexibility and freedom. In this regard, we conclude that platform workers are not given 'full control' and that Deliveroo is taking advantage of structural constraints to limit workers' choice while promising 'full flexibility' to workers (Wood, 2016, 2017).

As stated above, all the platform couriers interviewed considered that they had no clear information on the workings of the AM system, which obviously increases their uncertainty and insecurity. Nonetheless, other factors that escape the AM system have a significant impact on platform couriers' freedom and flexibility. In other words, the key reason why the introduction of the 'free login' system ended up generating even more precarious forms of work is that their remuneration was reduced. This reduction in remuneration was not induced by a reduction in the total demand for deliveries through Deliveroo. As the company has publicly stated, the COVID-19 outbreak and the subsequent lockdowns have helped the company to expand further. However, platform couriers did not reap the benefits of this expansion. On the contrary, they saw their earnings reduced.

In this paper, we have explained how Deliveroo took advantage of platform couriers' increased economic dependency marked by the COVID-19 outbreak to introduce a reduction in payment. First, Deliveroo implemented a reduction in the minimum payment per delivery by one euro. Second, the company implemented major and disproportionate onboarding campaigns reducing the average orders available per courier. Third, due to the oversupply of platform couriers and because the 'Frank' algorithm gives the order to the platform courier who is closest to the restaurant, the distance per delivery was significantly diminished, reducing paid working time.

Deliveroo has an inherent incentive to have as many couriers as possible on the roads and pay them poorly. In particular, the lack of consideration of connected time as

a task, with waiting time therefore not considered part of working time, acts as the main incentive to have as many couriers available as possible in real time, even if this implies that some platform couriers are not going to receive any orders. Consequently, an important factor, apart from the lack of transparency over the algorithm, is that platform couriers do not have a say in the payment system which determines, not only how much a courier is paid per delivery but also which tasks are paid for (e.g. Rosenblat & Stark, 2016; Veen, Barrat & Goods, 2019).

Deliveroo's payment system links with our interest in understanding the role of platform design in shaping the flexibility and freedom of platform workers. Digital technologies facilitate working in different spaces and at different times, transforming the organisation of work, but the increase in non-standard forms of employment is rooted in maximising profit in line with neoliberal beliefs. In other words, Deliveroo could be designed so that tasks and income were distributed fairly among couriers while reducing competition. However, platforms such as Deliveroo are not going to place workers' interest at the centre of their activity; it is embedded in the capitalist mode of production not to do so (Edwards, 1986; Marx & Scaron, 1975). In this regard, it is of the utmost importance to consider that a digital economy based on non-standard employment figures makes it more difficult for organisations to rely on standard practices if they want to remain competitive in the market. For this reason, despite the fact that it is not at the frontline of the current political debate, in parallel with policy initiatives focused on setting rules to protect workers, it is important to ensure that competition law does not hamper the emergence and growth of organisations that place workers' interest at the centre of their activity. However, another crucial aspect that makes paying platform couriers poorly easy for Deliveroo is their increasing economic dependence on the job. Platform work may offer opportunities for increased work–life balance, flexibility and freedom at work. However, currently, the asymmetry in power between platforms and workers is disproportionate. In order to rebalance this power relationship, platform workers' rights must be reinforced (Graham et al., 2020). It is of great importance to challenge the misclassification of workers. Despite platform companies justifying the use of non-standard forms of employment by deploying a rhetoric of innovation and new forms of work, their choice to do so is based on a cost-lowering strategy that relies on the circumvention of labour laws (Zwick, 2017). In this regard, an important aspect that needs to be tackled is the distinction between working time and non-working time, as well as the distinction between paid and unpaid tasks, a problem that goes beyond on-demand food delivery platforms and also applies in other forms of platform work. In particular, we have seen that working time is not directly linked to remuneration and that piece-rate payment converts flexibility and freedom on platforms into insecurity. The introduction of a free login has come accompanied by a reduction in remuneration, exacerbated by the fact that platform couriers are paid by the task, which implies that it is free for Deliveroo to have platform couriers waiting on the streets for deliveries. Therefore, if working time was considered as the period in which the worker is available to the platform, the uncertainty and instability that platform workers face would be considerably reduced.

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REFERENCES

- Alberti, G., I. Bessa, K. Hardy, V. Trappmann & C. Umney (2018). 'In, Against and Beyond Precarity: Work in Insecure Times', *Work, Employment and Society*, 32(3):447–457. doi: 10.1177/0950017018762088
- Altenried, M. (2019). 'On the last mile: logistical urbanism and the transformation of labour', *Work Organisation, Labour & Globalisation*, 13(1):114–129.
- Anwar, M.A. & M. Graham (2020). 'Between a rock and a hard place: Freedom, flexibility, precarity and vulnerability in the gig economy in Africa', *Competition & Change*. doi: 10.1177/1024529420914473
- Beck, U. (2000). *Brave new world of work*, Cambridge: Polity Press.
- Benkler, Y. (2019). 'Power and Productivity: Institutions, Ideology, and Technology in Political Economy'. *Political Economy and Justice*. SSRN Scholarly Paper ID 3503962. Social Science Research Network. doi: 10.2139/ssrn.3503962
- Benner, C. (2002). *Work in the New Economy: Flexible Labor Markets in Silicon Valley*, New Jersey: John Wiley & Sons.
- Benner, C. (2006). "South Africa on-call": Information technology and labour market restructuring in South African call centres, *Regional Studies*, 40 (9):1025–1040.
- Bessa, I. & J. Tomlinson (2017). 'Established, accelerated and emergent themes in flexible work research', *Journal of Industrial Relations*, 59(2):153–169. doi: 10.1177/0022185616671541
- Bucher, T. (2018). *If . . . then: Algorithmic power and politics*, Oxford: Oxford University Press.
- Burawoy, M. (1979). *Manufacturing Consent: Changes in the Labor Process Under Monopoly Capitalism*, Chicago: University of Chicago Press.
- Burchell, B. (2009). 'Flexicurity as a moderator of the relationship between job insecurity and psychological well-being', *Cambridge Journal of Regions, Economy and Society*, 2(3): 365–378. doi: 10.1093/cjres/rsp021
- Cant, C. (2020). *Riding for Deliveroo: Resistance in the new economy*, Cambridge: Polity Press.
- Deliveroo (2018). 'How and why am I offered specific orders?', *Roo Community*. Accessed 7 May 2021 from <https://hk-en.roocommunity.com/2018/05/06/order-assignment-2-2/>
- De Stefano, V. (2016). 'Non-Standard Work and Limits on Freedom of Association: A Human Rights-Based Approach', *Industrial Law Journal*. doi: 10.1093/indlaw/dww034
- De Stefano, V. (2018). "Negotiating the Algorithm": Automation, Artificial Intelligence and Labour Protection", *SSRN Scholarly*. doi: 10.2139/ssrn.3178233
- Edgell, S., H. Gottfried & E. Granter. (2015). *The SAGE Handbook of the Sociology of Work and Employment*, Croydon: SAGE. doi: 10.4135/9781473915206
- Edwards, P.K. (1986). *Conflict at Work: A Materialist Analysis of Workplace Relations*, London: Blackwell.
- EFE (2020). 'La "fiebre del oro" se apodera del "delivery"', *EXPANSION*. Accessed 12 December 2020 from <https://www.expansion.com/empresas/distribucion/2020/10/17/5f8b1fd5468aebf10f8b45ff.html>
- Fagan, C., C. Lyonette, M. Smith & A. Saldaña-Tejeda (2012). 'The influence of working time arrangements on work-life integration or "balance": A review of the international evidence', Geneva: International Labour Organization.
- Fleming, P. (2017). 'The Human Capital Hoax: Work, Debt and Insecurity in the Era of Uberization', *Organization Studies*, 38(5):691–709. doi: 10.1177/0170840616686129
- Fuster Morell, M., Espelt, R. & Renau Cano, M. (2020). Sustainable Platform Economy: Connections with the Sustainable Development Goals. *Sustainability*, 12(18), 7640. doi: 10.3390/su12187640
- Galière, S. (2020). 'When food-delivery platform workers consent to algorithmic management: A Foucauldian perspective', *New Technology, Work and Employment*, 35(3):357–370. doi: 10.1111/ntwe.12177
- Ginès i Fabrellas, A. (2021). 'El tiempo de trabajo en plataformas: Ausencia de jornada mínima, gamificación e inseguridad algorítmica', *LABOS Revista de Derecho del Trabajo y Protección Social*, 2(1):19–42. doi: 10.20318/labos.2021.6045

- Gispert, B. (2020). “Food delivery”: Un negocio de 740 millones reforzado por la pandemia’, *La Vanguardia*. Accessed 11 December 2020 from <https://www.lavanguardia.com/economia/20200727/482533491918/food-delivery-comida-domicilio-take-away-glovo-just-eat-deliveroo-uber-eats.html>
- Gouliquer, L. (2000). ‘Pandora’s Box: The Paradox of Flexibility in Today’s Workplace’, *Current Sociology*, 48(1):29–38. doi: 10.1177/0011392100048001004
- Graham, M., J. Woodcock, R. Heeks, P. Mungai, J.P. Van Belle, D. du Toit, S. Fredman, A. Osiki, A. van der Spuy & S.M. Silberman (2020). ‘The Fairwork Foundation: Strategies for improving platform work in a global context’, *Geoforum*, 112(1):100–103. doi: 10.1016/j.geoforum.2020.01.023
- Graziani, L.B. (2008). ‘El debate sobre el proceso de trabajo: Balance de una discusión’. *Observatorio Laboral Revista Venezolana*, 1(2):65–78.
- Harvey, D. (2005). *A Brief History of Neoliberalism*, Oxford: Oxford University Press.
- Heyes, J. (1997). ‘Annualised Hours and the “Knock”: The Organisation of Working Time in a Chemicals Plant’, *Work, Employment and Society*, 11 (1):65–81. doi: 10.1177/0950017097111004
- Hill, J., E. Grzywacz, J.G. Allen, S. Blanchard, V.L. Matz-Costa, C. Shulkin & M. Pitt-Catsouphes (2008). ‘Defining and conceptualizing workplace flexibility’, *Community, Work & Family*, 11 (2):149–163. doi: 10.1080/13668800802024678
- Hoang, L., G. Blank & A. Quan-Haase (2020). ‘The winners and the losers of the platform economy: Who participates?’, *Information Communication & Society*, 23(5):681–700. doi: 10.1080/1369118X.2020.1720771
- Holborow, M. (2015). *Language and Neoliberalism* (N.º1), London: Routledge.
- Huws, U. (2020). ‘The algorithm and the city: Platform labour and the urban environment’, *Work Organisation, Labour & Globalisation*, 14(1):7–14. doi: 10.13169/workorgalaboglob.14.1.0007
- Huws, U., J. Hurstfield & R. Holtmaat (1989). *What price flexibility? The casualisation of women’s employment*. London: Low Pay Unit.
- Huws, U., N. Spencer, D. Syrdal & K. Holts (2018). ‘Work in the European gig economy: Research results from the UK, Sweden, Germany, Austria, the Netherlands, Switzerland and Italy’, Hertfordshire: FEPS, UniGlobal and University of Hertfordshire.
- ILO (2007). *Decent working time: Balancing workers’ needs with business requirements* [Brochure]. Geneva: International Labour Organization. Accessed from http://www.ilo.org/travail/whatwedo/publications/WCMS_145391/lang--en/index.htm
- ILO (2018). *Working time and the future of work*. Geneva: International Labour Organization. Accessed from http://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS_649907/lang--en/index.htm
- ILO (2019). *Overtime work: A review of literature and initial empirical analysis*, Geneva: International Labour Organization. Accessed from http://www.ilo.org/travail/whatwedo/publications/WCMS_663072/lang--en/index.htm
- Ivanova, M, J. Bronowicka, E. Kocher & A. Degner (2018). ‘The App as a Boss? Control and Autonomy’, *Application-Based Management*. doi: 10.11584/arbeit-grenze-fluss.2
- Kellogg, K.C., M.A. Valentine & A. Christin (2020). ‘Algorithms at Work: The New Contested Terrain of Control’, *Academy of Management Annals*, 14(1):366–410. doi: 10.5465/annals.2018.0174
- Kenney, M. & J. Zysman (2016) ‘The Rise of the Platform Economy’ *Issues in Science and Technology*, 32 (3).
- Lambert, S.J. (2008). ‘Passing the buck: Labor flexibility practices that transfer risk onto hourly workers’, *Human Relations*, 61(9):1203–1227. doi: 10.1177/0018726708094910.
- Laukkanen, M. & N. Tura (2020). ‘The potential of sharing economy business models for sustainable value creation’, *Journal of Cleaner Production*, 253:n.p. doi.org/10.1016/j.jclepro.2020.120004
- Lee, M.K., D. Kusbit, E. Metsky & L. Dabbish (2015). ‘Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers’, *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems – CHI ’15*, 1603–1612. doi: 10.1145/2702123.2702548

- Lehdonvirta, V. (2018). 'Flexibility in the gig economy: Managing time on three online piecework platforms', *New Technology, Work and Employment*, 33(1):1–16. doi: 10.1111/ntwe.12102
- Marx, K. & P. Scaron (eds) (1975). *El capital: Crítica de la economía política*, México: Siglo XXI. <http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=3208391>
- McGaughey, E. (2018). 'Tayloroism: When network technology meets corporate power', *Industrial Relations Journal*, 49(5–6):459–472. doi: 10.1111/irj.12228
- Milkman, R., L. Elliott-Negri, K. Griesbach & A. Reich (2020) 'Gender, Class, and the Gig Economy: The Case of Platform-Based Food Delivery', *Critical Sociology*, 0896920520949631. doi: 10.1177/0896920520949631
- Moore, P.V. & S. Joyce (2020). 'Black box or hidden abode? The expansion and exposure of platform work managerialism', *Review of International Political Economy*, 27(4):926–948. doi: 10.1080/09692290.2019.1627569
- Neff, G. (2012). *Venture Labor: Work and the Burden of Risk in Innovative Industries*, Cambridge: MIT Press.
- Pollert, A. (1988). 'Dismantling flexibility', *Capital & Class*, 12(1):42–75. doi: 10.1177/030981688803400107
- Price, R. (2016) 'Controlling routine front line service workers: An Australian retail supermarket case', *Work, Employment and Society*, 30 (6):915–931. doi: 10.1177/0950017015601778
- Rani, U. & R.K. Dhir (2020). 'Platform Work and the COVID-19 Pandemic', *The Indian Journal of Labour Economics : The Quarterly Journal of the Indian Society of Labour Economics*, 1–9. doi: 10.1007/s41027-020-00273-y
- Ravenelle, A.J. (2019). *Hustle and Gig: Struggling and Surviving in the Sharing Economy*, University of California Press.
- Rosenblat, A. & L. Stark (2016). 'Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers', SSRN Scholarly Paper ID 2686227. Social Science Research Network. doi: 10.2139/ssrn.2686227
- Rossiter, N. (2016). *Software, Infrastructure, Labor: A Media Theory of Logistical Nightmares*, New York: Routledge.
- Schmidt, F. (2017). *Digital Labour Markets in the Platform Economy: Mapping the Political Challenges of Crowd Work and Gig Work*, Bonn: Friedrich Ebert Stiftung.
- Scholz, T. (2016). *Uberworked and underpaid: How workers are disrupting the digital economy*, Cambridge: Polity.
- Schor, J.B., W. Attwood-Charles, M. Cansoy, I. Ladegaard & R. Wengronowitz (2020). 'Dependence and precarity in the platform economy', *Theory and Society*, 49(5–6):833–861. doi: 10.1007/s11186-020-09408-y
- Shanahan, G. & M. Smith (2020). 'Fair's fair: Psychological contracts and power in platform work', *International Journal of Human Resource Management*. doi: 10.1080/09585192.2020.1867615
- Shed, S. (2017). 'Deliveroo is using an algorithm called 'Frank' to cut food delivery times by 20%', *Business Insider*. Accessed 11 December 2020 from <https://www.businessinsider.com/deliveroo-uses-frank-algorithm-to-cut-delivery-times-by-20-2017-7>
- Srnicek, N. (2017). *Platform Capitalism*, London: Polity Press.
- Standing, G. (2011). *The Precariat: The new dangerous class*, London: Bloomsbury.
- Sun, P. (2019). 'Your order, their labor: An exploration of algorithms and laboring on food delivery platforms in China', *Chinese Journal of Communication*, 12(3):308–323. doi: 10.1080/17544750.2019.1583676
- Thomas, P., L. McArdle & R. Saundry (2020). 'Introduction to the special issue: The enactment of neoliberalism in the workplace: The degradation of the employment relationship', *Competition & Change*, 24 (2):105–113. doi: 10.1177/1024529419882281
- Umer, H. (2021). 'Illusory freedom of physical platform workers: Insights from Uber Eats in Japan', *The Economic and Labour Relations Review*, 1035304621992466. doi: 10.1177/1035304621992466

- Urzi Brancati, M., A. Pesole, E. Fernández-Macías (2020). 'New evidence on platform workers in Europe: Results from the second COLLEEM survey', *European Commission & Joint Research Centre*.
- van Doorn, N. (2017). 'Platform labor: On the gendered and racialized exploitation of low-income service work in the "on-demand" economy', *Information, Communication & Society*, 20(6):898–914. doi: 10.1080/1369118X.2017.1294194
- van Doorn, N. (2020). 'At what price? Labour politics and calculative power struggles in on-demand food delivery', *Work Organisation, Labour & Globalisation*, 14(1):136–149. doi: 10.13169/workorglaboglob.14.1.0136.
- van Doorn, N. & J.Y. Chen (2020). 'Odds Stacked Against Workers: Labor process gamification on Chinese and American food delivery platforms', *Working Paper*, 37.
- Veen, A., T. Barratt & C. Goods (2019). 'Platform-Capital's "App-etite" for Control: A Labour Process Analysis of Food-Delivery Work in Australia', *Work, Employment and Society*. doi: 10.1177/0950017019836911
- Willmott, H. (1993). 'Strength Is Ignorance; Slavery Is Freedom: Managing Culture in Modern Organizations', *Journal of Management Studies*, 30 (4):515–552. doi: 10.1111/j.1467-6486.1993.tb00315.x
- Wood, A.J. (2016). 'Flexible scheduling, degradation of job quality and barriers to collective voice', *Human Relations*, 69(10):1989–2010. doi: 10.1177/0018726716631396
- Wood, A.J. (2017). 'Powerful times: Flexible discipline and schedule gifts at work', *Work, Employment and Society*, 32(6): 1–17. doi: 10.1177/0950017017719839
- Wood, A.J., M. Graham, V. Lehdonvirta & I. Hjorth (2019). 'Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy', *Work, Employment and Society*, 33 (1):56–75. doi: 10.1177/0950017018785616
- Zwick, A. (2017). 'Welcome to the Gig Economy: Neoliberal industrial relations and the case of Uber', *GeoJournal*, 83(4). doi: 10.1007/s10708-017-9793-8