# The warehouse without walls: A workers' inquiry at Deliveroo

Callum Cant

## abstract

This article focuses on the emergence of worker resistance at *Deliveroo*, a food delivery platform. By presenting the results of an eight-month workers' inquiry in Brighton it gives an initial account of work, self-organisation and resistance within a food delivery platform from the workers' point of view. The key focal points of this account are: the labour process and the use of technology therein; worker self-organisation via physically and digitally-mediated mass self-communication networks; and the use of those networks as a scaffolding for collective resistance utilising leverage tactics and strike action. These focal points are analysed in the light of class composition theory and the thought of Italian workerist Romano Alquati in particular. This article makes two contributions: first, it provides a first-hand account of the labour process at Deliveroo, and second, it provides an initial analysis of worker self-organisation and resistance within platform capitalism, and the new cycle of struggle that is resulting from it.

## Introduction

A one-week wildcat strike by Deliveroo workers in London in August 2016 (Waters and Woodcock, 2017) marked the opening of a new cycle of struggle in 'platform capitalism' (Srnicek, 2017). This cycle has gone on to become transnational in its dimensions, spreading across Europe and involving thousands of workers (Cant, 2018). Platform labour is a large-scale

phenomenon that increasingly defines the future of work. 2.8 million people worked in the UK 'gig economy' in the year to August 2017, 700,000 of whom earned less than £7.50 an hour. 21% of those people worked for food delivery platforms such as Deliveroo (Lepanjuuri et al., 2018). As a result, evidence of emergent worker self-organisation and resistance in the sector deserves significant attention.

But that attention has been lacking, as the dynamics of work and worker self-organisation/resistance within food delivery platforms remain largely unexplored in the academic literature, with a few notable exceptions (Tassarini and Maccarrone, 2017; Vandaele, 2018). Research into platform capitalism has covered topics of algorithmic management (Lee et al., 2015; Rosenblat and Stark, 2016; Schildt, 2017; Warin, 2017; Wood et al., 2019), health and safety (Christie and Ward, 2018), gender and race (van Doorn, 2017), and employment relations (Healy et al., 2017; Poon, 2019), but has primarily done so from the point of view of capitalist managers or disinterested observers. A move towards the perspective of the working class is necessary if we are to understand the dynamics of worker resistance that have been revealed by the opening of this cycle of struggle in platform capitalism.[1]

This article begins to accomplish that move by presenting the results of a workers' inquiry into Deliveroo, a 'geographically sticky' (Graham and Woodcock, 2018) food delivery 'lean platform' (Srnicek, 2017). The opening of this cycle of struggle is evidence that platforms like Deliveroo are now acting as laboratories for the development of forms of worker self-organisation and resistance on the basis of a new class composition. The underlying premise of this research is that in-depth inquiry at this point of development will offer not only technical insights into the development of the capitalist mode of production, but also political insights into the development of class struggle.

This article opens with a discussion of its theoretical and methodological basis, followed by an introduction to Deliveroo. After this the study presents

---

1   For more on the concept of cycles of struggle see Dyer-Witheford (2015).

an ethnographic account of working at Deliveroo, focusing particularly on; the labour process and the use of technology therein; worker self-organisation via the creation of physical and digitally-mediated mass self-communication networks; and the use of those networks as a scaffolding for mobilisation and resistance utilising leverage tactics and strike action. Then the article moves onto a twofold examination of the technical class composition within Deliveroo by analysing the relation between platform capitalism and algorithmic management. Following Alquati's example it then moves on to analyse the political class composition created by workers through the process of 'invisible organisation' (Alquati, 2013). The role of both physically and digitally mediated mass self-communication networks in developing material connections developed between workers is examined, as is the way that this laid the groundwork for the mobilisation of collective resistance. Particular attention is paid to the process of unmediated working class self-organisation and innovations in leverage tactics throughout the informal dispute. Finally, the article reflects on the potentials for and limitations on the circulation of struggle within and beyond food delivery platforms.

## Theory: Class composition

Italian workerism [operaismo] was a Marxist theoretical current which emerged in the early 1960s (see Wright, 2017). It was heterodox and internally divided from the start, but despite this division, a coherent theory of class composition emerged out of the kaleidoscope of debates, publications and practical initiatives that followed. Class composition is best understood as an objective process in two parts: the first is the organisation of labour-power as variable capital (technical composition), and the second is the self-organisation of labour-power as a working class against capital (political composition). In both forms, class composition is both product and producer of struggle over the social relations of the capitalist mode of production. The transition between technical and political composition is part of the leap that defines the working-class political viewpoint.

A turn towards the perspective of the working class and a contemporary investigation of the conditions of struggle on the new terrain of production can therefore find a number of theoretical weapons within workerism's armoury. One of the chief analysts of the conditions of struggle within the current was Romano Alquati, an Italian revolutionary whose work at FIAT and Olivetti was highly influential. Since 2013, Alquati's Anglophone legacy has developed significantly due to renewed interest in the theory and methods of workerism both in history (see Haider and Mohandesi, 2013) and practice (see Woodcock, 2017). Of particular relevance is Pasquinelli's insight that Alquati's work at Olivetti offers insights into self-valorising information circuits within the digital economy (Pasquinelli, 2015). On a wider front, workerism's continued relevance has been recently re-established by Wright in his analysis of the re-emergence of a cohesive international current of workerist research. This article draws on both Alquati specifically and workerism generally in order to apply the theory of class composition.

To compliment the inheritances of workerism, this article also draws upon recent work on techno-social developments in capitalist production. Nick Srnicek's big-picture theorisation of 'platform capitalism' is used throughout as a guiding set of arguments to be both followed and contested (Srnicek, 2017). The article also attempts to reorientate the concept of 'algorithmic management'(Lee et al., 2015; Rosenblat and Stark, 2016; Schildt, 2017; Wood et al., 2019) to begin an analysis of the role of algorithms in the labour process from the perspective of the working class.

## Method: Workers' inquiry

Workers' inquiry is a method with its roots in Marx (1880) which was readopted and developed throughout the 20th century (Haider and Mohandesi, 2013; Woodcock, 2014). Italian workerism was particularly involved with the method's adaptation and reapplication. The different factions of workerism had different interpretations of what exactly this method entailed, with Raniero Panzeri arguing for one model (Panzieri, 1965) and Romano Alquati for another (Alquati, 1993; Roggero, 2014). However, again, a cohesive

method of workers' inquiry can be derived from these varied sources, as Woodcock (2017) has shown in practice.

In its simplest form, a workers' inquiry consists of active interventionist research into labour processes and the political struggles that emerge from them. This research can proceed via a variety of more or less orthodox research methods, ranging from surveys and interviews to ethnography. This article presents the results of an eight-month workers' inquiry into Deliveroo in Brighton, conducted between September 2016 and May 2017. I used the extended case method (Burawoy, 1998), an ethnographic method which aims to focus on specific case studies to derive general insights, in order to pursue workers' inquiry. Throughout the research process, I made interventions to support worker self-organisation, in line with Burawoy's (1998: 14) view that 'intervention is not only an unavoidable part of social research but a virtue to be exploited'. The goal of these interventions was to engage in a process of 'coresearch' (Roggero, 2014) and expand the empirical basis of the inquiry. However, the inquiry did not begin with a defined methodology. I began working at Deliveroo because I needed a flexible part-time second job to supplement the below-average wages I earned at a full-time job and because, in the wake of the six-day strike in London in July (Waters and Woodcock, 2017) I was aware of the potential for labour resistance at Deliveroo and wanted to understand the situation from below.

The logic for using the workers' inquiry to generate this understanding is as follows: many abstract models have been generated in an attempt to overcome the crisis induced by 'coercive pacification'. To take only one example, long-time U.S. labour lawyer Staughton Lynd has proposed a model of 'solidarity unionism' as a way forwards through the current crisis of working class disorganisation on the new terrain of production (Lynd, 2015). This model is situated as fundamentally antagonistic to the current practices of the big AFL-CIO business unions. Lynd's model of solidarity unionism builds on U.S. labour militant Stan Weir's analysis of 'informal work groups'(Weir, 2004). Lynd argues that these informal groups should always be utilised within organising model in the same way: they should act as the basis for worker committees, which are in turn always the correct political form for the circulation and escalation of 'the spark that leaps from person to

person'(Lynd, 2015:66). But such abstract generalisations are a shaky basis for organising strategies. The method of workers' inquiry differs from the 'solidarity unionism' approach because it starts from the assumption that the correct political form for working class self-organisation can only be determined in the reality of the workplace itself. Whilst the workerist approach to self-organisation on new terrain maintains a fundamental political sympathy with Lynd's vision, it begins from a different methodological standpoint. Political forms are not determined *apriori*: they have to be discovered. In part, this is the purpose of workers' inquiry. Built into the intention of the method is an attempt to find what political forms are being generated organically within the workplace and, to that end, how these can be connected to a wider class politics.

The application of the method of workers' inquiry to Deliveroo creates one potential point of confusion: the legal classification of Deliveroo couriers as self-employed independent contractors. Deliveroo workers are clearly flexible – doubly flexible in the same way that Marx (1967) said proletarians are doubly free; flexible to work or flexible to starve. This article proceeds on the basis that these flexible independent contractors are, in fact, still members of the working class, despite Deliveroo's misclassification.

## Working for Deliveroo

Will Shu and Greg Orlowski founded Deliveroo in August 2012. The platform provides a food delivery service via an app. In the five years since it was founded, surplus capital seeking to find a return in a low interest rate environment has flooded into platforms (Srnicek, 2017: 86). Deliveroo has been one of the main beneficiaries of this investment. According to the *Financial Times*, between 2013 and 2016, Deliveroo was by far the fastest growing company in Europe, with total revenue growth of 107,117% (Smith et al., 2018). As of February 22nd 2017, there were 15,000 Deliveroo bicycle/motorcycle couriers in the UK, working in over 100 cities and towns (Work and Pensions Committee, 2017). Deliveroo recorded an annual loss of £129.1 million (Titcomb, 2017) in 2016 and has yet to turn an annual profit. Deliveroo is one of the paradigmatic examples of the 'gig economy' model.

In September 2016, the process of getting a job with Deliveroo was very simple. I signed up online, got a call the same day, and set up a date to do a trial ride. The trial ride itself consisted of fifteen minutes of cycling under observation followed by a chat with the worker running the trial. I then signed a supplier agreement online, completed an online training course, picked up my delivery equipment from a storage unit in the city, and downloaded the app. The ten minutes I spent with a local manager at the storage unit was the only time I met with a formal manager at any point during my entire time working for Deliveroo. As soon as I had the app set up I could start work. In Brighton all couriers were on a total piece rate, meaning that there was no formal shift system and the pay was £4 per completed delivery.[2] I could work at any time between 11.45am to 11pm Monday to Thursday and 9am to 11pm on Friday to Sunday.

When I wanted to work, I opened the app, logged in and selected 'available for orders'. As soon as I did that, the app would instruct me to go to the zone centre and wait for an order. My location and availability began to be factored into the app, and when I was selected for an order I would get a notification. The app would tell me the location of the restaurant, and I would then accept or decline the order. If I accepted, as I usually did, I then cycled to the restaurant, locked up my bike, swiped on the app to indicate that I had arrived, and told the staff I was there. If I could not find the restaurant I had the option to call them through the app. I would then pick up the food, tapping on each item on the app to confirm it was in the order, and put it in my bag. The app would then tell me the customer's location. I then unlocked my bike, cycled there and dropped off the food, swiping to confirm both arrival at the customer's location and successful delivery. If I could not find the customer I had the option to call them through the app. At the end of this process I had earned £4 and was available for new orders once again. I then cycled back to the zone centre or, if I wanted to stop working, turned the app off. There were a number of potential variations on this basic sequence. You could refuse an

2    During my time at Deliveroo, I was aware of at least three other pay structures elsewhere in the country. There were two varieties of the hourly-paid shift pattern; £7 per hour plus £1 per delivery and £6 per hour plus £1 per delivery, and one other variety of the piece rate; £3.75 per drop.

order, get a double order, or encounter a problem with the order. If you refused an order you carried on waiting. If you got a double you simply picked up two sets of food rather than one from the same restaurant, delivered to two separate customer locations and earned two separate delivery fees. If you encountered a problem, you rang a call centre and talked to call centre workers about what to do. The process governing this cycle remained entirely opaque to courier workers, meaning that all we knew about how the app worked apart from the direct outputs was based on discussion, rumour and speculation.

In terms of standards, we were meant to accept 90% of orders and deliver them within a certain timeframe. Both of these standards were badly communicated. Workers did have their 'supplier agreements' terminated at times, meaning they couldn't work for Deliveroo any more, but the reasons were not officially communicated to the rest of the workforce, and word of mouth discussion amongst workers was understandably unreliable.

'Surges' were used to increase the availability of riders at peak times by offering temporary wage increases across the zone. Workers were notified by text if a surge was going to take place - usually if heavy rain was forecast, a weekend looked particularly busy, or during the breakfast periods on the weekend. The bonuses offered by a surge varied, from an extra £0.50 or £1 per delivery to an extra £10 after you completed ten deliveries. These surges were much more common in late 2016 when the workforce was smaller and the demand for labour higher. In early 2017 a 'pulse' system started to be trialled. This pulse was meant to indicate demand by showing order volume on a scale from low to very high. Some riders used this to determine when they should work, but comparisons at the zone centre showed that two different riders could have totally different pulse readings at any one time, and the variation between points on the scale could be rapid. More reliable were the weekly emailed (and later in-app) demand predictions.

Workers were paid on a fortnightly basis, and for the first £300 every rider earned, half the paycheque would be subtracted to cover the £150 equipment deposit. Some workers claimed that Deliveroo's payment system was

inaccurate, and that some weeks they were paid for fewer orders than they had actually completed.

All the in-person contact I had with other workers came through either chance encounters during the labour process itself (waiting at a restaurant, chatting at a traffic light etc.) or through meeting whilst waiting for orders at the zone centre. At first, I would rarely meet more than one or two other workers at the zone centre at any one time. But as September turned into October and October into November, every shift consisted of more and more time spent waiting. The groups waiting at the zone centre started to get bigger, and discussions started to get angrier.

## Worker self-organisation and resistance in Brighton

The method of workers' inquiry has often been accompanied by a particular kind of reading and writing of 'proletarian documentary literature' (Hastings-King, 2014). This literature is composed of texts written and circulated by workers, primarily in the form of newspapers and bulletins. The process of inquiry at Deliveroo gave rise to another instance of this form: the *Rebel Roo,* a monthly bulletin written, edited and distributed by Deliveroo workers.

After I had been working for Deliveroo for two months, I was involved in the initial production and distribution of the *Rebel Roo*. This coincided with the drop off in relative order volume, and the increase in waiting time spent at the zone centre.

By issue 2 of *Rebel Roo*, published in December, a worker wrote about the impromptu meetings we were holding at our zone centre. The fall in wages had continued, and so had the rapid process of worker self-organisation. The WhatsApp networks and Facebook groups that connected the more regular workers had begun to take on a similar function to that of the zone centre. This organisation reached a turning point when a meeting was called for the 25th of January. Eighteen workers met with representatives of the *Independent Workers of Great Britain (IWGB)* union to discuss forming a union branch and taking action. This initial meeting was made up almost entirely of cyclists, but news of possible action spread fast. Within days a group of Brazillian moped

riders had taken the initiative. They bypassed the nascent union to ==call a two-hour strike for Saturday February 4th==. The cyclists agreed to join the strike, and news of the action began to be spread at the zone centre and through online networks.

==On Saturday roughly 100 strikers met for a demonstration and mass meeting at the Jubilee square zone centre== before setting off as a flying picket across the city (Williams, 2017). During the meeting workers agreed to formally unionise with the IWGB and make three demands of the company. These were; an increase in the piece rate to £5 per drop, a recruitment freeze, and no victimisation of unionised riders. These demands were sent to Deliveroo by the IWGB with a two-week deadline for response. This initial mobilisation fed off a second wave of national momentum. After the initial outbreak of strikes in London in the summer of 2016, organisation was now spreading rapidly around the UK. The combined online and offline circulation of *Rebel Roo* had grown to over 1000 a month, enough to reach between 6-10% of the national workforce, and was making connections transnationally with workers in Italy, France and Germany. There were the beginnings of organisation in cities as socially and politically diverse as Bath, Middlesbrough, Liverpool, Portsmouth, Manchester and Glasgow. Key parts of the emerging platform workers' movement converged for discussions with each other and the Italian Si Cobas base union at the *Transnational Social Strike Platform*'s assembly in London on the 11th of February. The movement seemed to be approaching a critical point.

When seven workers from Leeds were victimised, the *Industrial Workers of the World (IWW),* the major union organising beyond Brighton and London, were keen to push for national strike action[3]. But there was hesitation elsewhere about the possibility of such an escalation. At the same time, the Brighton demands deadline came and went. However, workers decided not to escalate nationally, and maintained a local focus. A demonstration was planned in Brighton for the 14th of March, which brought together forty workers to demonstrate around the city (Walton, 2017). Another followed on the 1st of

---

3    The first national food platform strike action took place on October 4th 2018.
     (Marotta 2018; Woodcock and Hughes 2018).

April, which mobilised about twenty. Following these two mobilisations, Deliveroo workers initiated a coalition with workers from supermarkets and higher education to call a 'Precarious Mayday' demonstration, of a similar style to the *EuroMayDay* mobilisations of the mid 2000s (Foti, 2009). The coalition mobilised around 100 people (Thompson, 2017). Despite continued organising efforts, momentum had ebbed.

By the end of the inquiry in May, wages and conditions in Brighton had improved significantly from the low point in January. Two out of the three initial demands made by the IWGB had been met: there had been a temporary recruitment freeze, and no strikers had been victimised. Workers in Leeds also managed to win the reinstatement of victimised workers and forced Deliveroo to relocate the manager who had victimised them. However, the base of these struggles had fragmented, and successive mobilisations were declining in efficacy. A period of disorganisation set in, as the rapid turnover of workers diluted existing self-organisation.

## Platform capitalism, algorithmic management and the labour process at Deliveroo

There are two fundamental characteristics of the organisation of labour at Deliveroo which need to be understood in order to grasp its technical class composition, and the potentials for the leap into worker self-organisation that result: platform capitalism and algorithmic management.

*Platform Capitalism*

Nick Srnicek (2017: 43-7) defines the model of platform capitalist companies through four key characteristics: first, they use 'digital infrastructures which enable two or more groups to interact' and position themselves to extract data; second, they rely upon 'network effects'; third, they cross-subsidise to provide some features below cost; and fourth, they embody a politics by shaping the ways in which interactions can take place.

More specifically, Srnicek provides a typography of platforms. Deliveroo is, in his schema, a 'lean platform'. The fundamental feature of these lean

platforms is the outsourcing of workers, fixed capital, maintenance costs and training; 'All that remains is a bare extractive minimum – control over the platform that enables a monopoly rent to be gained' (Srnicek, 2017: 76).

This view has influenced prominent trade unionists in the gig economy, such as James Farrar. Farrar is the general secretary of the *United Private Hire Drivers*, a branch of the IWGB and the largest national Uber union. He has argued that under platform capitalism 'workers supply the capital and labour' while the platforms have 'become corporate rent seekers'(Farrar, 2018). However, this argument contains a fundamental flaw. When Srnicek describes the bicycles and mopeds of Deliveroo workers as fixed capital he makes a categorical error. To understand the significance of the lean platform model, it is important to clarify the specific relation of that model to the categories of Marxist critique. So, what is capital? 'Capital is a sum of value that valorises itself, that executes the movement M-C-M[1]' (Heinrich, 2012: 90). That is to say, capital is value that increases in size through the addition to itself of surplus-value produced by labour-power. Therefore, capital is a social relation that implies a specific class structure in the mode of production. Capital itself is divided into two parts: constant and variable. Marx defines constant capital as that part which 'does not, in the process of production, undergo any quantitative altering of value', and variable capital as that part, labour-power, which 'does, in the process of production, undergo an alteration of value' by producing an excess, surplus-value (1967:202). Constant capital is further subdivided into two parts: fixed and circulating. Fixed capital is that part of constant capital which outlasts one production cycle and is the 'means of labour', such as machinery. Circulating capital is that part of constant capital which is used up in one production cycle and is the 'object of labour', such as raw materials (Marx, 1978: 298).

So, to return to the bicycle of a Deliveroo worker: for it to be fixed capital, this commodity would have to be part of the sum of value that valorises itself through the addition of surplus-value. This worker would then be accessing the value produced by their own labour-power beyond just the portion paid in wages. Carpenters, chefs, cleaners; any workers who provide their own additional commodities when selling their labour-power would own part of the means of production. This would imply that these forms of work produce

a transformation in the class structure of capitalist production. This is not Srnicek's claim but is the outcome of his use of the categories of Marxist critique. Capital is a social relation, not a fixed object: a bicycle or a moped is only fixed capital if it is part of the sum of value that valorises itself through the addition of surplus-value.

So what is a Deliveroo workers' bike or moped, then, if not fixed capital? When Marx proposes M-C-M[1] as the general formula of capital, he opposes it to another formula: C-M-C. In this second cycle, a commodity (labour-power) is exchanged for a sum of value in the form of money (a wage) that is then exchanged for more commodities (means of subsistence) that are consumed, without any further exchange, to reproduce that first commodity (labour-power). This cycle of consumption, the general formula of working class reproduction under capitalism, demonstrates that commodities involved in the labour process but not in the capital relation should be understood as means of subsistence. Marx articulates the means of subsistence as a historically determined category, which involves everything from food to clothes and furniture. Transformations in the conditions of capitalist society, particularly the state of class struggle and the 'degree of civilisation' (Marx, 1969:168), determine what is contained within this category. The innovation of lean platforms is that they take advantage of a disorganisation of the contemporary working class to redefine the means of subsistence to include commodities like smartphones, bicycles and mopeds, but without increasing the value of the wage. This change takes the form of a demand on workers: in order to sell your labour-power, you must now augment it with other commodities. This demand leads to a downward pressure on any part of sum of value contained within the means of subsistence that is not dedicated to bare reproduction. Nick Dyer-Witherford's (2015) analysis of the role of mobile phones as 'inelastic' commodities, unavoidably necessary for accessing the precarious labour market in the developing world, is the exact parallel of this dynamic. Workers experience the expansion of the value of 'inelastic' commodities that make up the means of subsistence as an escalation in the quantitative cost of reproduction, not a qualitative shift in social relations. Lean platforms do not outsource fixed capital, instead, they participate in the regressive redefinition of the means of subsistence.

The second important feature of lean platforms is the classification of workers as self-employed independent contractors. When we signed our contracts with Deliveroo, every rider agreed to be classified as self-employed, even though most of us thought that was an obvious distortion of the truth. An IWGB survey showed that 87.1% of Deliveroo worker respondents believed that their independent contractor status was inaccurate (Independent Workers of Great Britain and Woodcock, 2017). Disregarding the question of legal categories, the class relationship of worker and capital remained the same. The purpose of this change in legal status was to push workers into a position where they are forced to work at an hourly wage below that enforced by the state. Again, the IWGB survey showed that workers understood this dynamic, with 92% responding that being classified as 'self-employed' resulted in them 'being treated unfairly compared to an employee' (*ibid.*). Without the mediation of minimum wage law the wage is determined primarily by the power relations between classes. This absence of the state had clear implications for the forms of organisation used to challenge and transform these relations.

*Algorithmic Management*

Algorithmic management was first defined as: 'software algorithms that assume managerial functions and surrounding institutional devices that support algorithms in practice' (Lee et al., 2015). The reorganisation of the labour process caused by the introduction of algorithmic management has material impacts on the technical class composition in food delivery platforms which are best understood by comparison both to human-managed courier delivery and other parts of the logistics sector. The form of organisation of labour that predominates in non-platform courier work involves human dispatchers operating from a central depot and co-ordinating a fleet of couriers through radio communications (Bossen, 2012). But when working for Deliveroo workers have no radios and see no supervisors. On any given night in one city algorithmic management makes possible immensely complex logistical processes that organise thousands of couriers going from hundreds of restaurants to tens of thousands of customers.

Conventionally within the field of logistical software, warehouse management systems (WMS) and transport management systems (TMS) perform two distinct sets of key functions (Nettsträter et al., 2015). The Deliveroo labour management system, however, breaks down the distinctions between WMS and TMS systems. Its key functionality contains elements of both. From warehouse management comes order processing, release, retrieval and picking. From transport management comes order management, scheduling, transport planning/optimisation, tracking and tracing. As such, the best way to understand the Deliveroo labour management system from the perspective of the worker is that it's capable of conceptualising the spatial 'zone' in which it operates as two overlaid layers: as a warehouse and as a transport network. This co-management of warehousing and transport is no longer human-led, but algorithmic.

Seen from this angle, it is quite clear that algorithmic management is a specific form of automation. An algorithmic dispatcher replaces a human one, as inter-capitalist competitive pressure forces capitalist managers forwards in the search for relative surplus-value. Human labour is still required to supervise the function of constant capital in the form of an algorithmic manager, but this supervision functions on a higher level than a radio dispatcher. The innovation of the food delivery platform emerges out of an attempt to develop a new avenue for the exploitation of labour-power. In this new form, the variable capital of dispatchers has been augmented by the constant capital of algorithms, leading to a rising organic composition of capital and a corresponding tendency towards a decreasing rate of profit (Marx, 1981:317). As such, the contradictions of the capitalist mode of production endure despite apparent transformations in the concrete form of value production. The expansion of algorithmic management can be conceived in a general way: inter-capitalist competition forces the development of forms of constant capital in all areas, not just in lean platforms. In the UK, research in supermarkets (Barr, 2018) and warehouses (Delfanti, 2018; Moore and Akhtar, 2016) already demonstrates the growth of diverse forms of algorithmic management far beyond food delivery platforms. As a result, algorithmic management is best understood as an automated

mode of management that is expanding across the sphere of production and recomposing its terrain.

The second key feature of the algorithmic management of labour at Deliveroo is its 'black box' (Pasquale, 2015) characteristic. In short, this means that Deliveroo courier workers have very limited control of the labour process and take instructions from the app without contextual information. They are powerless to understand or contest the decisions of the 'black box', and the relationship between automated management and workers is a vertical. The logic of management and the specifics of the labour process are hidden from those who carry it out. The only direction workers receive is a depersonalised sequence of repetitive commands. The informational dissymmetry and hierarchy of a 'black boxed' labour process is not just produced by a lack of workers control over the black box, but also by the black box's extensive control over workers. Whilst workers struggle to understand the principles and systems used to manage them, the black box uses a constant stream of location, speed and time data to maintain control of the labour process. This information is fed upstream and used to refine the management of labour-power via machine learning practices which make decisions on the (re)design and (re)organisation of the labour process, often without any human input. This is a significant expansion of the dynamic that Pasquinelli claims Alquati first understood in the context of manufacturing at the Italian firm Olivetti with his concept of 'valorising information' (Pasquinelli, 2015). When Taylor first laid out the goal of scientific management, he aimed to give managers the information required to minutely control the labour process and combat the refusal of work enacted by workers on a granular level through 'soldering' (Taylor, 2014). Algorithmic management takes this dynamic even further, undermining the worker/manager knowledge hierarchy that Taylor identified, so that it is no longer workers whose knowledge needs to be discovered by managers in order to exert control over labour-power (*ibid.*), but vice versa.

## Invisible organisation and political composition

Whilst reflecting on worker resistance at a FIAT manufacturing plant in Turin, Romano Alquati developed the concept of 'invisible organisation' to

understand the forms of self-organisation which enabled the massive, generalised wildcat strikes that had bypassed institutional structures to shut down the plant (Alquati, 2013). Evan Calder Williams, in his reading of Alquati, notes the three critical steps taken by Alquati via this concept which distinguish his approach from the rest of the workerist tradition. These are, first, an examination of the rational and historical nature of the wildcat strike; second, a recognition of the way in which invisible organisation is generated both by and within capital as part of its attempt to circumnavigate its own contradictions; and third, a treatment of theory as an 'accomplice' to this invisible organisation (Calder Williams, 2013). All three of these steps are useful for an inquiry into Deliveroo. Specifically, understanding how workers formed effective collectives by using common online and offline communication channels despite their spatial and subjective disintegration allows us to place the emergence of visible worker resistance in its proper context. Rather than accepting 'spontaneity' as a sufficient explanation, we have to understand the technical basis for the resulting political composition.

The self-organisation of Deliveroo workers proceeded on the basis of opportunities built into the labour process. At the time, the most pronounced of these opportunities was the 'zone centre'. Whenever a Deliveroo worker is waiting for an order, the app instructs them to 'go to zone centre'. In Brighton there were two of these meeting points, one for mopeds on Spring Gardens and one for cyclists on Jubilee Street, both in the central North Laine area of the city.

At the zone centres, large numbers of workers gathered when waiting for work. This dynamic is not unique to Deliveroo riders: London dockers used to wait 'on the stones' to see if they would get work, and this offered organising opportunities for worker resistance such as the 1889 London dock strike (McCarthy, 1988). Similarly, Deliveroo riders waited 'on the phones'. This often created the conditions for impromptu mass meetings of workers discussing organisation and action around grievances relating to low pay and bad conditions. These meetings were influenced by the use of piece rates by Deliveroo. The natural first question from one rider to another was: 'how many orders have you had?' This produced, in effect, a constant collective comparison and discussion of wages. Zone centres also acted as a hub for

distribution of copies of the *Rebel Roo* workers' bulletin. When the app crashed  as it did numerous times in early 2017 – most of the workers in the city would head for the zone centres, creating the conditions for even larger meetings.
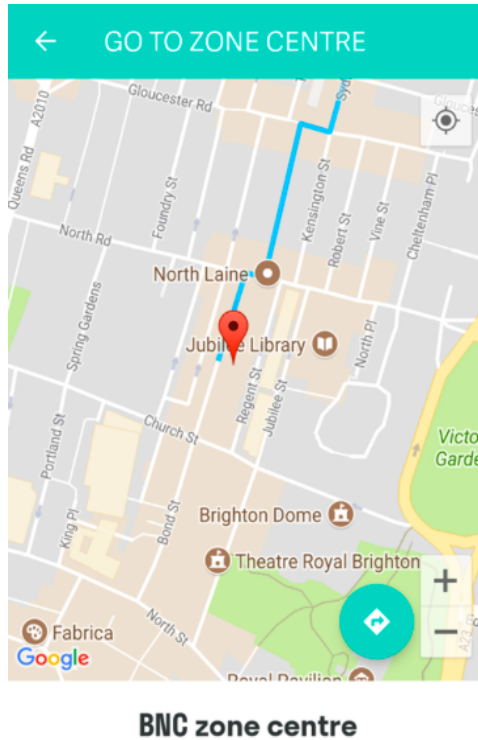


**BNC zone centre**

Figure 1. The 'Go to Zone Centre' screen giving directions to zone centre for a cyclist

The existence of in-person communication channels also allowed for the expansion of digitally-mediated communication, as workers were added to encrypted instant messaging group chats through the contacts they made at the zone centre. At least two 50+ worker WhatsApp groups existed by January, one for the cyclists and one for the mopeds, alongside at least one large Facebook group. Combined, these groups functioned as backchannels which contained an estimated 50% of the workforce.[4] These networked workers were

---

4   This estimate is premised on a combination of ethnographic data and an assumption of relative equivalence in worker self-communication between

predominantly those who did more hours per week, and therefore were responsible for the fulfilment of a disproportionate number of orders. This allowed for an extension of discussions beyond the zone centre amongst the most important segments of the workforce and the development of a many-to-many communication capacity. The role of these groups was analogous to the 'mass self-communication networks' identified amongst Walmart workers by Alex Wood (2015). As well as communication functions, these groups also developed solidarity functions. Riders with problems such as punctured tyres could ask for help from other riders in order to allow them to continue working rather than going home early and missing out on orders. This online networking later proved invaluable for mobilisation.

These networks were often built between a highly heterogenous workforce. There was no hegemonic specific 'culture' to which workers could refer. Deliveroo's workforce was a varied mass of deskilled labour, not a community of subcultural workers with 'courier' identities. Instead, more common points of connection were music and religion. Trade unionists involved in the original London dispute said that the invisibly organised groups which had started the strike there had known each other from one of two places: either East London mosque, or Gabber raves. [5] But in both cases, these cultural commonalities were only the initial starting point for connections within the workforce and could not bridge to connect between all the points of the invisible structure of organisation.

The material specifics of the labour process created the conditions for the political leap from subjectively-disintegrated labour-power organised *by* capital into a recomposed class organised *against* capital. The transition from technical to political composition was underway, facilitated by the invisible

---

remote micro-work freelancers and lean platform workers (see Warin, 2017; Wood et al., 2018).

5    Gabber is a genre of dance music, originating in the working-class areas around the container ports of Rotterdam in the Netherlands in the 1990s. It has been described as 'the hardest, fastest, most terrifying most apocalyptic dance music in the civilised world' (Marshall, 1993, p. 85 as cited in Verhagen et al., 2000, p. 147).

organisation that workers had developed both in-person and via digitally-mediated communication.

This turn to worker resistance was acute due to the unmediated dynamics of the power relations between classes within Deliveroo. The use of 'independent contractor' legal status by Deliveroo led to a series of consequences for the resulting political class composition. Firstly, labour law designed to protect workers by granting legally enforceable rights like a minimum wage, holiday pay, and sick pay no longer applied. But, on the other hand, trade union law that functioned to restrict the action of workers to a set of legal processes determined by an increasingly authoritarian state (Bogg, 2016) also no longer applied. This opened avenues for the recomposition of the class around unrestricted antagonism.

For the workers, this meant that direct action was the only avenue available to redress grievances. Local or informal solutions in one workplace could not be negotiated on the job between workers and management with action short of a strike: after all, the algorithm wasn't designed to negotiate. Algorithmic management foreclosed the possibility for management to use procedural means to indirectly maintain authority during a period of negotiation and compromise (Friedman, 1978: 96). This situation produced a tendency towards polarisation and the widespread use of strategies that relied upon immediate class power at the point of production, led by workers with no obligation to follow restrictive legally enforced procedure, and no option to achieve better conditions apart from through direct action. The circumnavigation of the classical institutions of the workers' movement such as the large TUC trade unions was the result of this dynamic. The assertion of a specific kind of working class autonomy was not a consciously political decision; it was a product of a specific class composition.

The highest tactical expression of this strategy of unmediated direct action was an innovation on the flying picket. Deliveroo's use of a logistical system that maps warehouse and transport on top of one another eliminated the classic site of worker leverage in logistics: bottlenecks. Whereas usually the transition between different stages of a logistical system requires a narrowing process (the transition from warehouse to road freight, for example) this

simultaneous system operates with near-total decentralisation (see fig.2). Visible or disruptive pickets could take place on key arterial roads, but if they remained static their leverage would be limited.
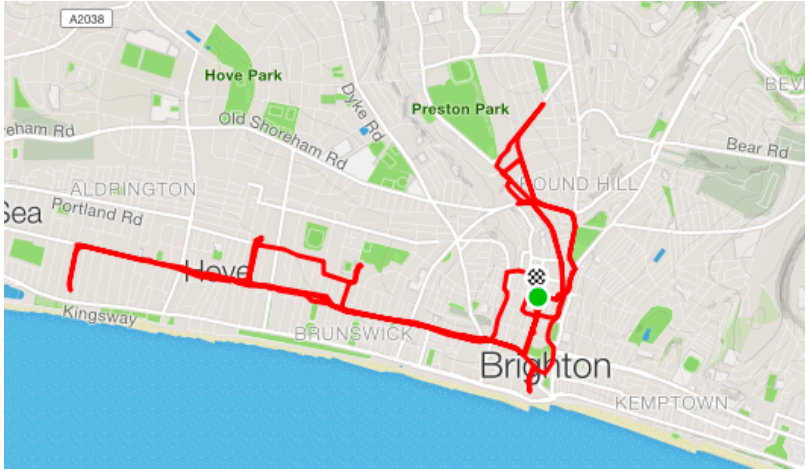


Figure 2. Route taken over 2 hour Deliveroo shift in September 2016

A decentralised process demands decentralised tactics, and so the classical static picket had to become a flying picket by virtue of the organisation of labour. As a result, workers designed a tactic whereby they met at the heart of their invisible organisation– their zone centres – then moved along key roads. The leverage of this tactic derived from a disruption of the circulation of commodities in the city on a general level, but also the specific contact with other workers who were not aware of or not supportive of the strike. This allowed other workers to talk to them and perform the classical picket function. As they circulated around the city, pickets also engaged with restaurant workers to try and get them to sign a petition in the name of their workplace calling on Deliveroo to meet the IWGB demands.

This autonomy, however, did not preclude alliances. Deliveroo workers found that because of the public nature of their workplace, social movements participated in the dispute quite organically. Other social groups could support flying pickets as demonstrators, in a way that mirrored the tactic of the 'critical mass' (Boal and Carlsson, 2009). This duality brought out the public and political nature of the dispute.

The movement was always based on the workplace leverage of the strike. However, this basis was complimented by additional social movement techniques that fell into the category of 'leverage tactics': a specific subset of tactics focusing on reputational damage, politicisation of the dispute and 'associational leverage' (Olin-Wright, 2000). Leverage tactics employed by the IWGB were worrying enough to elements of the state to form part of an investigation by the Cameron conservative government in 2014 (Carr, 2014). Altogether, the form of strike action developed by Deliveroo workers had significant impact. The 4th of February strike was reported, by workers, to have cut order volumes by up to 50% for the whole evening at large restaurants like *Wagamama, Yo Sushi!* and *Las Iguanas*. Even when workers did not call all-out strikes, they employed very similar tactics for their demonstrations:
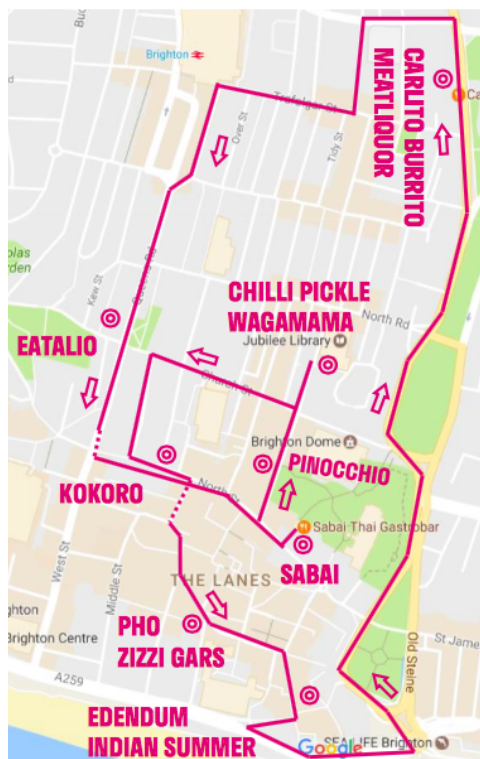


Figure 3. Stewards map of 'Ride With Us' Demonstration, 1st April 2017

This unmediated struggle was fierce, but cracks began to show in the organisation of Deliveroo workers. The collective subject created by the

labour process was unstable. It combined a heterogenous workforce and relied on the zone centre in order to develop meaningful coherence. Striation along the lines of migration status, language, race, level of education, forms of other income, age and so on were pronounced.

In many ways the division between cyclists and mopeds amplified this striation. These two groups of workers occupied parallel organisational structures: they had different zone centres, different WhatsApp groups and were made up of different class fractions. When the invisible organisation was strong, the two categories of worker could respond to each other's actions: mopeds could take the initiative for action from cyclists, cyclists could join a strike called by mopeds and so on. But a decentralised labour process could only go so far in producing a collective. As soon as the recruitment freeze began to give riders more work, no one was stopping at the zone centre any more. The invisible organisation of workers and corresponding visible struggle began to degrade from this point onwards, and the gulf between mopeds and cyclists grew. Workers were never in control of the circumstances that had produced the conditions for self-organisation – they never got their hands on the levers of the black box – and therefore were powerless to prevent those conditions changing. This lack of control manifested itself as the clear limit of the struggle, which prevented the further development of worker resistance.

## Conclusion

This article makes two contributions: first, it provides a first-hand account of the labour process at Deliveroo. Second, it develops an initial analysis of worker self-organisation and resistance within platform capitalism, and the new cycle of struggle that is resulting from it.

The first-hand account given above clarifies some of the key aspects of the technical class composition at Deliveroo. The labour process at food platforms essentially consists of final-stage logistics work. This work is controlled via the black boxed algorithmic management and has built into it a number of antagonisms (primarily associated with wages and piece rates) and opportunities for worker self-organisation (primarily realised via zone

centres). An analysis of this process from the point of view of the worker can disprove mistaken theories about the outsourcing of capital under platform capitalism, and provide evidence that the defining trend in the sector is the regressive redefinition of the means of subsistence.

The skeleton of invisible organisation that arises from this technical composition is defined by digitally-mediated mass self-communication networks and zone centre meetings. When a process of mobilisation towards collective worker resistance occurs in this context, it is characterised by the use of unmediated and autonomous class struggle strategies based on a combination of workplace and associational leverage, thereby producing the specific political composition of the sector. The struggle of Deliveroo workers in Brighton in 2017 was primarily limited by a collective failure to gain any control the labour process and the instability of the coalition of class fractions which underlaid the creation of a collective subject. This combined weakness resulted in the IWGB campaign and associated worker self-organisation winning some but not all of the initial demands decided upon at the February strike meeting.

New developments in class composition, notably the concept of 'social composition' (Woodcock et al., 2018), challenge researchers to expand our analysis beyond the workplace and deal systematically with questions of consumption and reproduction and overcome the limitations of this article. Further work on platform capitalism might focus on the intersection of food platform worker resistance with wider trends: the transformations of UK higher education since 2010 and the resulting creation of large-scale student workforces (Collins, 2013; Myers, 2017), the commodification of reproductive labour since the 1970s (Endnotes, 2013), the creation of racialised surplus populations in large urban areas (Moody, 2017), and the role of autonomous migration in reshaping the working class (Mezzadra 2010), amongst others. This research could contribute substantially to developing a literature on the emergent sector which prioritises the perspective of workers. This reprioritisation is essential if research is to reflect the reality that under the capitalist mode of production working class disempowerment can structurally never be final. As workerist Mario Tronti put it:

> The equilibrium of power seems solid: the relation of forces is disadvantageous. And yet, where the domination of capital is at its most powerful, the threat of the workers runs deepest. (Tronti, 2013:87; *translated by the author*).

To take a historical example: before the potentials for renewed class power within Fordism were understood it was assumed that this new technical composition would reduce workplace leverage. Only with the discovery of the sit-down strike did workers realise their recomposed capacity to disrupt production (Silver, 2003: 6). There is a chance that we are in a similar moment with platform capitalism: in the pause between the introduction of a new technical composition which deconstructs old forms of resistance and the completion of a period of working class experimentation that gives birth to new ones. There is no guarantee that a form worthy of comparison with the sit-down strike will be found during such experimentation, but it seems at least possible.

## references

Alquati, R. (1993) *Per fare conricerca*. Padova: Calusca Edizioni.

Alquati, R. (2013) 'The struggle at FIAT', translated by Evan Calder Williams, *Viewpoint,* 2013
[https://www.viewpointmag.com/2013/09/26/struggle-at-fiat-1964/].

Barr, A. (2018) 'Microresistance: Inside the day of a supermarket picker', *Notes From Below*, 30 March.
[http://www.notesfrombelow.org/article/inside-the-day-of-a-supermarket-picker]

Boal, I. and C. Carlsson (2009) 'Critical mass', in I. Ness (ed.). *The international encyclopedia of revolution and protest*. New York: Wiley-Blackwell.

Bogg, A. (2016) 'Beyond neo-liberalism: The trade union act 2016 and the authoritarian state', *Industrial Law Journal,* 45(3): 299-336.

Bossen, C. (2012) 'The Chicago Couriers' union 2003-2010: A case study in solidarity unionism', *WorkingUSA,* 15 (2): 197-215.

Burawoy, M. (1998) 'The extended case method', *Sociological Theory,* 16(1): 4-33.

Calder Williams, E. (2013) 'Invisible organisation: Reading Romano Alquati', *Viewpoint*, 2013.
[https://www.viewpointmag.com/2013/09/26/invisible-organization-reading-romano-alquati/]

Cant, C. (2018) 'The wave of worker resistance in European food platforms 2016-17', *Notes From Below*, 29 January 2018.
[http://www.notesfrombelow.org/article/european-food-platform-strike-wave]

Carr, B. (2014) The Carr report: The report of the independent review of the law governing industrials disputes.
[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/363806/Carr_Review_Report.pdf]

Christie, N. and H. Ward (2018) The emerging issues for management of occupational road risk in a changing economy: A survey of gig economy drivers, riders and their managers. UCL Centre for Transport Studies.
[http://www.ucl.ac.uk/news/news-articles/0818/200818-gig-economy-drivers-traffic-collisions]

Collins, R. (2013) 'The end of middle class work: No more escapes', in I Wallerstein, R Collins, M Mann, G. Derluguian, C. Calhoun *Does Capitalism Have a Future?* (pp. 37-70). Oxford, New York: Oxford University Press.

Delfanti, A. (2018) 'Amazon is the new FIAT', *Notes From Below,* 16 August 2018 [https://notesfrombelow.org/article/amazon-is-the-new-fiat].

Dyer-Witheford, N. (2015) *Cyber-proleteriat: Global labour in the digital vortex*. London: Pluto Press.

Endnotes (2013) 'The logic of gender', 2013.
[https://endnotes.org.uk/issues/3/en/endnotes-the-logic-of-gender]

Farrar, J. (2018) 'Don't be fooled by deliveroo's share handout – 30,000 workers are excluded from its success', *The New Statesman*, 17 May 2018.
[https://www.newstatesman.com/politics/uk/2018/05/don-t-be-fooled-deliveroo-s-share-handout-30000-workers-are-excluded-its-success]

Foti, A. (2009) 'EuroMayDay', in I Ness (ed.)*The international encyclopedia of revolution and protest*. New York: Wiley-Blackwell.

Friedman, A. L. (1978) *Industry and labour: Class struggle at work and monopoly capitalism*. 1. ed., repr. London: Macmillan.

Graham, M. and J. Woodcock (2018) 'Towards a fairer platform economy: Introducing the fairwork foundation', *Alternate Routes: A Journal of Critical Social Research,* 29: 242-53.

Haider, A. and S. Mohandesi (2013) 'Workers' inquiry: A genealogy', *Viewpoint*, 2013. [https://www.viewpointmag. com/2013/09/2 /workers-inquiry-a-genealogy/].

Hastings-King, S. (2014) *Looking for the proletariat*. Boston: Brill.

Healy, J., D. Nicholson and A. Pekarek (2017) 'Should we take the gig economy seriously?', *Labour & Industry: A Journal of the Social and Economic Relations of Work,* 27(3): 232-48.

Heinrich, M. (2012) *An introduction to the three volumes of Karl Marx's capital*. Translated by A Locascio. New York: Monthly Review Press.

Independent Workers of Great Britain, Couriers and Logistics Branch, and J. Woodcock (2017) IWGB Evidence Submission. 'The Future World of Work' Parlimentary Select Committee. [http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/business-energy-and-industrial-strategy-committee/future-world-of-work/written/47112.pdf]

Lee, M. K., D. Kusbit, E. Metsky and L. Dabbish (2015) 'Working with Machines: The Impact of Algorithmic and Data-Driven Management on Human Workers', in *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. [https://www.cs.cmu.edu/~mklee/materials/Publication/2015-CHI_algorithmic_management.pdf]

Lepanjuuri, K., R. Wishart and P. Cornick (2018) 'The characteristics of those in the gig economy'. Department for business, energy and industrial strategy. [http://natcen.ac.uk/our-research/research/characteristics-of-the-gig-economy/]

Lynd, S. (2015) *Solidarity unionism: Rebuilding the labor movement from below*. Second edition. Oakland, CA : PM Press.

Marotta, A. (2018) 'Couriers' struggle and the IWW: Reflections on October 4th', *Notes From Below,* 11 October 2018. [https://notesfrombelow.org/article/couriers-struggle-and-iww-reflections-october-4th].

Marx, K. (1880) 'A Worker's inquiry'. Translated by Price Curtis. *La Revue Socialiste*, 20 April 1880 [https://www.marxists.org/archive/marx/works/1880/04/20.htm].

Marx, K.(1967) *Capital*. Edited by Frederick Engels. Translated by Samuel Moore and Edward Aveling. 4th ed. Vol. 1. New York: International Publishers.

Marx, K. (1978) *Capital*. Edited by Frederick Engels. Translated by D Fernbach. 3rd ed. Vol. 2. London: Penguin Books.

McCarthy, T. (ed.) (1988) *The Great Dock Strike, 1889*. London: Weidenfeld and Nicolson in association with the Transport and General Workers' Union.

Mezzadra, S. (2010) 'The gaze of autonomy: capitalism, migration and social struggles', in V. Squire (ed.) *The contested politics of mobility borderzones and irregularity*, translated by Rodrigo Nunes. London: Routledge.

Moody, K. (2017) *On new terrain: How capital is reshaping the battleground of class war*. Chicago, Il: Haymarket Books.

Moore, P. and P. Akhtar (2016) 'The psychosocial impacts of technological change in contemporary workplaces, and trade union responses', *International Journal of Labour Research*, 8(1-2): 101-31.

Myers, M. (2017) *Student revolt: Voices of the austerity generation*. London: Pluto Press.

Nettsträter, A., T. Geißen, M. Witthaut, D. Ebel and J. Schoneboom (2015) 'Logistics Software Systems and Functions: An Overview of ERP, WMS, TMS and SCM Systems', in M ten Hompel, J Rehof, O Wolf (eds.) *Cloud Computing for Logistics* (pp. 1–11). Cham: Springer International Publishing.

Panzieri, R. (1965) 'Socialist Uses of Workers' Inquiry'. Translated by Arianna Bove. European Institute for Progressive Cultural Policies. [http://eipcp.net/transversal/0406/panzieri/en]

Pasquale, F. (2015) *The black box society: The secret algorithms that control money and information*. Cambridge: Harvard University Press.

Pasquinelli, M. (2015) 'Italian operaismo and the information machine', *Theory, Culture & Society,* 32(3): 49-68.

Poon, T. S. C. (2019) 'Independent workers: Growth trends, categories, and employee relations implications in the emerging gig economy', *Employee Responsibilities and Rights Journal*, 31(1):63-69.

Roggero, G. (2014) 'Notes on framing and re-inventing coresearch', *ephemera,* 14(3): 515-23.

Rosenblat, A. and L. Stark (2016) 'Algorithmic labor and information asymmetries: A case study of Uber's drivers', *International Journal of Communication*, 10: 3758-3784.

Schildt, H. (2017) 'Big data and organizational design – the brave new world of algorithmic management and computer augmented transparency', *Innovation,* 19(1): 23-30.

Smith, I., D. Blood and Æ. Rininsland (2018) 'The FT 1000: The complete list of Europe's fastest-growing companies', *The Financial Times*, 4 June 2018. [https://ig.ft.com/ft-1000/2018/].

Srnicek, N. (2017) *Platform Capitalism*. London: Polity.

Tassarini, A. and V. Maccarrone (2017) 'The mobilisation of gig economy couriers in Italy: Some lessons for the trade union movement', *European Review of Labour and Research,* 23(3): 353-57.

Taylor, F.W. (2014) *The principles of scientific management*. Mansfield: Martino Publishing.

Thompson, F. (2017) 'Crowds gather to back the Deliveroo riders' protest', *The Argus*, 5 March 2017.
[http://www.theargus.co.uk/news/15261201.Crowds_gather_to_back_the_Deliveroo_riders___protest/]

Titcomb, J. (2017) 'Deliveroo revenues grow over 600pc but losses stack up'. *The Telegraph*, 21 September 2017.
[https://www.telegraph.co.uk/technology/2017/09/21/deliveroo-revenues-grow-600pc-losses-stack/]

Tronti, M. (2013) *Operai e Capitale*. Rome: DeriveApprodi.

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.

Vandaele, K. (2018) 'Will trade unions survive in the platform economy? Emerging patterns of platform workers' collective voice and representation in Europe', Brussels: European Trade Union Insitute. [https://www.etui.org/Publications2/Working-Papers/Will-trade-unions-survive-in-the-platform-economy-Emerging-patterns-of-platform-workers-collective-voice-and-representation-in-Europe]

Verhagen, S., F. van Wel, T. ter Bogt and B. Hibbel (2000) 'Fast on 200 beats per minute: The youth culture of gabbers in the Netherlands', *Youth & Society,* 32(2): 147-64.

Walton, J. (2017) 'Delivery riders hopping mad over low wages', *The Argus*, 15 March 2017. [http://www.theargus.co.uk/news/15156740.Delivery_riders_hopping_mad_over_low_wages/]

Warin, R. (2017) 'Dinner for one? A report on Deliveroo work in Brighton', *Autonomy*, November 2017.

Waters, F. and J. Woodcock (2017) 'Far from seamless: A workers' inquiry at Deliveroo', *Viewpoint*, 2017. [https://www.viewpointmag.com/2017/09/20/far-seamless-workers-inquiry-deliveroo/]

Weir, S. (2004) *Singlejack solidarity*. Minneapolis: University of Minnesota Press.

Williams, A. (2017) 'Delivery workers in protest over pay and conditions', *The Argus*, 2 August 2017. [http://www.theargus.co.uk/news/15077088.Delivery_workers_in_protest_over_pay_and_conditions/]

Wood, A. J. (2015) 'Networks of injustice and worker mobilisation at Walmart', *Industrial Relations Journal,* 46(4): 259-274.

Wood, A. J., M. Graham, V. Lehdonvirta and I. Hjorth (2019) 'Good gig, bad big: Autonomy and algorithmic control in the global gig economy', *Work, Employment and Society*, 33 (1):56-75.

Wood, A. J., V. Lehdonvirta and M. Graham (2018) 'Workers of the internet unite? Online freelancer organisation among remote gig economy workers in six Asian and African countries', Working Paper, Oxford Internet Insitute.

Woodcock, J. (2014) 'The workers' inquiry from Trotskyism to operaismo: A political methodology for investigating the workplace', e*phemera,* 14(4): 493-513.

Woodcock, J. (2017) *Working the Phones*. London: Pluto Press.

Woodcock, J. and L. Hughes (2018) 'The view from the picket line: Reports from the food platform strike on October 4th', *Notes From Below*, 11 October 2018 [https://notesfrombelow.org/article/view-picket-line-reports-food-platform-strike-octo].

Woodcock, J., S. Wheeler, J. Thorne, C. Cant, A. Marotta and L. Hughes (2018) 'The workers' inquiry and social composition', *Notes From Below,* 2018. [http://www.notesfrombelow.org/article/workers-inquiry-and-social-composition]

Work and Pensions Committee (2017) 'Self-employment and the gig economy'. Oral Evidence.

Wright, E. O. (2000) 'Working-class power, capitalist-class interests, and class compromise', *American Journal of Sociology,* 105(4): 957-1002.

Wright, S. (2017) *Storming heaven: Class composition and struggle in Italian autonomist Marxism*. 2nd ed. London: Pluto Press.

## the author

Callum Cant is a PhD student at the University of West London using workers' inquiry to investigate contemporary class composition in the UK.
Email: callumcant@gmail.com