MEDIÁLNÍ STUDIA
MEDIA STUDIES
JOURNAL FOR CRITICAL MEDIA INQUIRY

Encountering algorithms in the urban space: a matter of knowledge. An enactive ethnography of riders' work

Francesco Bonifacio

To cite this article:
Bonifacio, F. (2021). Encountering algorithms in the urban space: a matter of knowledge. An enactive ethnography of riders' work. *Mediální studia*, 15(2), 85–103.

ISSN 2464-4846
Journal website: https://www.medialnistudia.fsv.cuni.cz/

2/2021

ENCOUNTERING ALGORITHMS IN THE URBAN SPACE: A MATTER OF KNOWLEDGE. AN ENACTIVE ETHNOGRAPHY OF RIDERS' WORK

FRANCESCO BONIFACIO
Catholic University, Milan

ABSTRACT

In the academic debate, an increasing number of studies has addressed the disciplining function of the algorithmic management upon food-delivery workers. The technological infrastructure has been understood as a tool in the hands of the management, against which workers can only resist or succumb insofar as they comply (or not) with algorithmic prescriptions. Less attention has been given to what the interaction with algorithms is made of. By adopting riders' point of view, this article explores the meanings and competences attached to such interaction, which shapes workers' spatial and temporal experience. Framing the everyday encounters with algorithms as a "site of knowing" (Nicolini 2011), the paper shows the emergence of a professional vision within (a part of) riders' community. The research draws on six-months Milan-based observant participation during which the author worked as a part-time rider, integrated with 21 in-depth interviews and a small-sized survey (n=130) with workers.

Keywords: food-delivery work ▪ platform economy ▪ algorithms ▪ urban space ▪ practice theories ▪ ethnography

1. INTRODUCTION: ADDRESSING THE SPECIFICITY OF A NEW OCCUPATION

Among the increasing number of platform labours, food-delivery couriers – the so-called riders – have achieved the greatest public visibility. In the academic debate, a growing interdisciplinary literature – ranging from labour law to economic sociology – has addressed this work in reference to broader socioeconomic processes related to the platformisation of society (Van Dijck et al. 2018, p. 2). Riders have been understood alternatively as the labour function in the process of capital accumulation (van Doorn & Badger 2020), as the symbol of contractual and wage precarity characterizing platform capitalism (Goods et al. 2019), or as the protagonists of a new stage

of class struggle led by the emerging informal unions (Marrone 2021; Tassinari & Maccarone 2020). Moreover, the research tends addressing food-delivery work as a generic labour within the platform economy examining cross-cutting organisational issues, such as the so-called algorithmic management (Stark & Pais 2020). Griesbach and colleagues, for example, have framed food-delivery as a "rapidly expanding sector of platform work" (2019, p. 2) comparing it to the "companies such as Uber, Lyft, Instacart, TaskRabbit, Mechanical Turk, Care.com that use cloud-based technology to bring workers and consumers together" (ibid., p.1). Similarly, Veen et al. have dialogued with empirical studies carried out in several different working environments, identifying the algorithmic management as a distinct feature of the "app-based platform-work" (Veen et al. 2020, p. 2). This homogenizing trend finds a theoretical legitimacy in contributions that advanced the adoption of normative frameworks rooted in critical theories for the study of the gig economy as a whole (Gandini 2019; Woodcock & Graham 2019). In particular, Gandini has recommended using the Marxist approach of labour process theory to study "what is unique about the gig economy, as a way of working through (and for) a digital platform' (Gandini 2019, p. 1040), framing the platform as the "point of production: intended as the 'place' where the labour process is enacted upon workers" (ibid.). Focusing on the consequences carried by the algorithms intermediation of the labour process, these studies have undeniably refined our understanding of the platform as a new economic model. On the contrary, by disregarding the specificity of such occupation, less attention has been given to what the interaction with algorithms is actually made of. In this regard, riders have been understood as (more or less) resistant in relation to the algorithmic management, insofar as they comply (or not) with algorithmic prescriptions. This article argues that by adopting the riders' point of view, we can shed lights on the meanings and competences attached to such interaction, shaping workers' spatial and temporal experience. Framing the everyday encounters with algorithms as a site of knowing (Nicolini 2011) of the work-practice, I will show the emergence of a professional vision (Goodwin, 1994) within (a part of) riders' community.

The paper proceeds as follow. First, I will start by reviewing the literature on algorithmic management. Then, I will briefly illustrate the theoretical framework of the research, addressing the epistemological and methodological challenges related to the study of algorithms *in use*. This theoretical reflection will set the stage for discussing empirical results in the last sections, where I will try to illustrate riders' spatial and temporal experience resulting from how they practically understand algorithms.

2. THE LITERATURE ON ALGORITHMIC MANAGEMENT

To situate our argument, consistently with the tendency to address food-delivery work as a generic labour within the platform economy, this paragraph presents a synthesis of the literature on algorithmic management related to different platform labours. Mostly rooted in critical theories, these studies share a common

perspective on the role of algorithms at work, conceiving technology as an element determining the organizational structure, hiding the hand of the management (Gandini 2019) – yet, without eliminating it. Overall, this literature advances an understanding of algorithms as opaque codes carrying out informative asymmetries between managers and workers, which are reported to strengthen the structure of power between capital and labour in favour of the former. Accordingly, Vallas and Schor have proposed the image of the "digital cage" (2020, p. 278), paraphrasing the famous metaphor of the "iron cage" used by Weber to describe modern processes of bureaucratization. Through an extensive literature review, Kellog, Valentine, and Christin (2020) have identified six ways in which algorithms can be employed for control purposes: by "limiting" available courses of action; by "recommending" some choices instead of others; by "recording" job performances and "evaluating" workers; and by disciplining workers, "rewarding" or "replacing" them with others. An early influential research in the field of algorithmic management is the one conducted by Rosenblat and Stark (2016) on Uber drivers, in the American context. Drawing on drivers discussions on the web, the authors illustrated several algorithm-mediated techniques through which the platform exerts an indirect control over drivers, reducing their autonomy. Techniques such as surge pricing and reputational systems are seen as a form of "soft control" (ibid., p. 3768), where the middle management is being replaced by customers. Rosenblat and Stark's research has inspired many of the studies produced subsequently, both on the experience of Uber drivers (Chan & Humphreys 2018; Rosenblat 2018), and on other platform workers. In the case of riders, similar conclusions are reached by Shapiro's ethnographic study (2018) in the US, as well as by Barratt et al. (2020) and Veen et al. (2020) in the Australian context. In addition, several authors have stressed the presence of platforms' gamified inclinations (Gerber & Krzywdzinski 2019; van Doorn 2017) aimed at stimulating workers' performances. In food-delivery work, the emergence of gamified affordances has been observed by van Doorn (2018), in the transition from a stable pay system (hourly or piece-based) to a dynamic one (built on variable pay and bonuses).

Despite the risk that algorithmic management may reduce workers' ability "to resist, elude, or challenge the rules and expectations that firms establish as conditions of participation" (Vallas & Schor 2020), several studies have showcased the workers' agency in regaining control over the labour process. Drawing on a literature review, Graham and Ferrari identified three strategies – manipulation, subversion, disruption – through which workers attack the so-called "fissures" of the algorithmic power, understood as the "moments in which algorithms do not govern as intended" (2021, p.2). For example, Rahman (2019) observed how UpWork's freelancers elaborated a way to circumvent the platform's reputational metrics by forming personal alliances with customers to keep the level of their own ratings. In a similar case study, Jarrahi and Sutherland have described workers' agency as a "meaning-making strategy to open the black box" and to "circumvent or manipulate algorithms to their own advantage" (2019, p. 585). Such strategies have been described in terms of "algorithmic

competence" (Cheng & Foley 2019; Kaine & Josserand 2019), "work games" (Manriquez 2019) or "tactical quantifications" (Irani & Silberman 2013). In relation to food-delivery work, several authors have emphasized riders' ability to resist algorithmic control on an individual level (Griesbach et al. 2019; Newlands 2021; Shapiro 2018; Veen et al. 2020), remarking the difficulty of translating it into a collective plan.

Nevertheless, despite observing a higher or lower capacity to circumvent the algorithmic control, I argue that the meaning of riders' interaction with algorithms cannot be automatically understood in terms of resistance. On the contrary, it must be empirically questioned with reference to the practice wherein it is situated. If we want to understand how algorithms work in terms of "constituting and being constituted in and through practice" (Bucher 2018), the riders' work-practice needs to become the empirical focus. Therefore, a precise notion of practice is needed.

3. WORKING AS A RIDER, USING AN ALGORITHM

Despite disagreeing about the identification of its constitutive elements, practice theories share a common perspective in the way they reject traditional dualisms in sociological thinking such as body/mind, individual/structure, social/material (Reckwitz 2002). Reckwitz has provided an extensive definition of a practice, as "a routinized type of behaviour, which consists of several elements interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (Reckwitz, 2002, p.249). Accordingly, a practice is socially recognisable only as the result of how these elements provisionally – while quite stably – interweave one another. In this case, riders' work results from the interconnection between a body, the platform mediating the work, a certain type of urban knowledge, means of transport, urban materiality, rules, discourses and representations. As such, riding is recognised and represented differently from other similar practices, such as cycling for recreational or commuting purposes. Notwithstanding their internal differences, practice theories share a relational perspective on materiality (Gherardi 2016; Schatzki 2010; Shove 2016), that is particularly beneficial to discuss the interaction between riders and algorithms. In short, it implies to question the role and the meaning played by materiality in relation to specific practices, moving from the study of *technology as such* to the *technology in use*. Given their ubiquitous character, the role played by algorithms fundamentally depends on how we delimit the boundaries of our research object. As for instance, Richardson suggests to focus on the delicate coordination of different social agents – restaurants, riders and customers – in space and time to realise the delivered meal (2020). For that purpose, algorithms are best understood as things working in the background, as infrastructures. Conversely, being focused on what riders do during their everyday work-experience as we were in this research, algorithms are more conveniently understood as material resources used by riders, as "something that

is used or transformed radically in the course of the practice" (Shove, 2016, p.156). Nonetheless, this analytical shift does not solve the epistemological and methodological issues on what it means to use algorithms. More precisely, it does not clarify what are we supposed to look at when we address the interaction between riders and algorithms.

4. EPISTEMOLOGICAL AND METHODOLOGICAL CHALLENGES ABOUT *ENCOUNTERING* ALGORITHMS

Technically, an algorithm can be defined as "a set of coded procedures to transform an input into the desired type of output" (Gillespie 2014). More specifically, as noted by Giardullo, "an algorithm works through input data, that must be organized in the way they can be handled according to the operations envisioned by the algorithm itself" (Giardullo 2020, p. 217 trans. by me). At an early stage, the theoretical reflection on algorithms has mainly focused on their discriminatory functions, highlighting the lack of neutrality in the automated decision-making process (Diakopoulos 2014; Pasquale 2015). This perspective has emphasized the opaque nature of algorithms, representing them as poorly intelligible entities with a high social power (Beer 2017). Gradually, this approach has been complemented by the reflection that arose at the intersection between media studies and science and technology studies, which expressed a greater sensitivity towards the performative nature of algorithms, returning attention to the users' agency (Velkova & Kaun 2021). As I briefly mentioned at the end of the last section, this new interpretive strand has suggested shifting the focus from the effects of algorithms *as such* to how they are *used* (Aragona et al. 2020) as part of social practices (Bucher 2018).

Now, it is not obvious to understand what it does mean to use an algorithm, given its opaque and invisible character. From this standpoint, I share Gillespie's position, according to whom the best way to understand how algorithms matter to social phenomena concerns with the "insertion of procedure into human knowledge and social experience" (Gillespie 2016). Accordingly, Gillespie has advocated using the term 'algorithm' as an adjective rather than as a noun (ibid.). The notion of 'algorithmic imaginary' (Bucher, 2018) is a pivotal example of such adjectival use[1], relating the interaction with algorithms to a matter of knowledge, to the extent that users "perception and knowledge [of how algorithms work] affect their use of social media platforms" (Bucher 2018, p,17). Consistently with Bucher's perspective, algorithms may be understood as a "site of knowing" (Nicolini 2011) of the riders' practice: riders learn how to proficiently use algorithms by making sense of their opaque operation, trying to infer the inputs they compute in the process of decision making. And this knowledge, recursively, shapes the practice itself. In this vein, it's worth noting that by no means does the notion of algorithmic imaginary imply a free-floating

1 others being "algorithmic culture" (Striphas 2015) or "algorithmic identity" (Cheney-Lippold 2011)

perception of the technology. Rather, Bucher associates the imaginary of algorithms to a kind of practical knowledge – that is, knowing "in order to engage meaningfully with and find [the] way around an algorithmically mediated world" (Bucher 2018, p.98) – that echoes concepts such as practical understanding (Schatzki 2001) or practical logic (Bourdieu 1990).

In order to explore how an algorithmic imaginary operates, a methodological tactic advocated by Bucher is to scrutinize the "phenomenological encounters with unknown knows" (Bucher 2018, p.61) when riders make sense of the algorithms functioning. Focusing on such encounters allows us to grasp what other sources of know-how are interwoven with an algorithmic imaginary, and it enables us to observe how the work-experience "takes shape [...] through encounters with algorithms" (ibid., p.62). It is not easy to Isolating these encounters since algorithms permeate the entire work practice, pre-mediating (Jansson 2013) riders' spatial and temporal experience. However, it is possible to identify a few circumstances where the relevance of algorithms is tangibly evident – in Bucher terms, when an algorithm "comes to matter" – related to the occasions when riders have to make decisions: where to wait for a delivery, when to close and to pick up the order and, most of all, whether to accept or reject it. Focusing on such circumstances, in what follows, I will show the everyday encounters between riders and algorithms. Before, a brief methodological account of the research is needed.

5. METHODOLOGY: AN *ENACTIVE* ETHNOGRAPHY

This paper draws on six-months observant participation between January and July 2020, during which I have worked as a Glovo[2] part-time rider. The study took place in Milan, which is a remarkable context given the high penetration of food-delivery platforms. The choice to work for Glovo was partly dictated by convenience. I applied to all the platforms many times. Glovo provided me with an account in less than 24 hours, as did Uber Eats. Deliveroo and Just Eat never accepted my application. Hiring strategies are one of the many elements of differentiation between food delivery platforms, which riders themselves commonly acknowledge[3]. Exploring how different platform affordances prefigure the work-practice exceeds the scope of this paper, although it is definitely an aspect of interest. During my fieldwork, I had contacts with different groups of workers, also joining them in their off-work activities. Moreover, I integrated my ethnographical observations with 21 interviews with workers and few interviews with restaurant managers. Also, a survey was personally administered in the physical space to a small, statistically unrepresentative sample

2 Glovo is a Spanish food-delivery platform operates in Milan together with an increasing number of platforms, the biggest being Uber Eats, Deliveroo and Just Eat.

3 As instance, Uber Eats is often portrayed as the sub-Saharan riders' app, while Deliveroo is widely acknowledged as the app of professional riders. The accusation of illegal hiring of immigrants against Uber Eats provides more than a proof in this sense.

of workers (n=130). The primary goal of the survey was to improve the recruitment of the most informative cases for in-depth interviews. Secondly, drawing on a preliminary analysis of ethnographic observations, the survey meant to collect information about the most salient aspects of the work-practice (e.g. deliveries rejection, the work vehicle, workers' sociality with other colleagues, etc.) to explore any possible associations. An in-depth discussion of the survey construction and analysis exceeds the scope of this paper. Here, survey data will be used to triangulate qualitative information related to a specific aspect – riders' interaction with algorithms – to strengthen our main argument. In particular, to show the emergence of a professional vision (Goodwin 1994) that, while referred to many aspects of the work, is particularly evident when it comes to the interaction with algorithms.

Methodologically, working as a rider brought opportunistic and epistemic advantages. From the first point of view, approaching riders with a backpack on my shoulders has certainly helped to contain their potential mistrust towards my role as a researcher, exposing me first-hand to the social dynamics I wanted to study. A further opportunistic advantage was the possibility to interact personally with the platform, taking screenshots of the app's graphical interface. Epistemic advantages concern the chance of addressing my work practice and its transformation over time as a specific object of inquiry. In this vein, I have followed Loic Wacquant famous "enactive ethnography"[4] of the boxing gym in the black ghetto of Chicago (Wacquant 2015). Wacquant has emphasized the importance of "entering into the theatre of action in some ordinary capacity" (2015, p. 6) to investigate the way the sociologist appropriates "the cognitive, ethical, aesthetic and conative patterns that engage in the everyday those who inhabit it" (Wacquant 2002, p. 7). By identifying my initiation into the occupation as a specific analytical object, I was able to reconstruct the formation of my dispositions towards the work practice. Recursively, I could also detect the forms of knowledge required by practice in order to participate diligently, for its analytical reconstruction. In addition, in-depth interviews with other workers allowed me to provide a polyphonic picture of the riders' experience. In the following discussion, I will try to combine notes from my own learning journey together with fragments of interviews with workers.

6. THE ALGORITHMIC-MEDIATED PRODUCTION OF SPACE

As briefly mentioned, riders are usually paid variably for each delivery they fulfil during the hourly slots when they are registered to work. In the case of Glovo, the price of each delivery is contingently calculated by adding a fixed component to a variable one. The latter is the sum of the distance – calculated by Google Maps – between

4 According to Wacquant, the notion of *enactive ethnography* emphasizes that, like any participant, also the researcher enters the field of enquiry from his or her own social and incarnate position, which must be reflexively objectified in order to corroborate the validity of the scientific claims produced.

the rider and the restaurant, and the distance which separates the restaurant and the customer. To optimize the amount of money gained by delivering within a limited time, one of the most crucial competencies concerns the orders' evaluation. Discriminating between good and bad gigs informs the decision about what orders should be accepted or re-assigned.

> "[...] It's 8.30 pm, and I get a new order: the restaurant is near, but the delivery address is very far, approximately in Vigentino. I don't know that area at all. [...] I need to think about it: if I accept this order, it will take me really far: what will the streets be like? Wide, busy, more dangerous? For sure, it is paid more than the average: 7 euros and something. But is it worth getting that far for 7 euros? What if I refuse this order and wait for others to arrive? If I accept this, and then I make another one, I could reach 11, 12 euro. If I refuse this, instead, I could maybe make three deliveries till 10 p.m. [...] Partly out of laziness, I click on the red button, and I get this screenshot that pushes me to reconsider my decision. What I am sure about is that I am wasting time. So I decide to accept the gig, and I start pedalling towards the restaurant [...] I deliver the food. I close the order, and I check the map: I am almost out of the active area. I did not see many restaurants along the road. I guess that in order to receive new gigs, I must go back. And quickly, because it is 9.15 p.m. and my work hours end at 10 p.m. I pedal for 10 minutes, and when I reach viale Isonzo, I stop at the traffic light, and I realise that I got an order."
>
> (Fieldnote, 28/1/2018)

Figure 1. Active area to receive orders. Screenshot produced on the 10/2/2020

As the novice that I am in this episode, I show a very poor algorithmic imaginary. I assume that if I re-assign this gig, I may receive a better one, but I do not disclose any other criteria to properly evaluate the delivery I am assigned to. Only after I have delivered the meal to the customer, I realise I am almost out of the area where orders can be assigned – the one highlighted in green in the app (Figure 1). I don't even consider the scarcity of restaurants that I will find in the customer area, which represents another fundamental node of a rider's mental map (Lynch 1960), influencing the further probability of receiving new orders. Indeed, such seemingly trivial evaluation criteria are the product of a gradual learning journey with the job. As Giovanni states:

> "At the beginning, I used to accept everything they sent me…crazy far destinations…Now I don't do those things anymore, because…how to say, because I can choose the deliveries I want to do. After a while you learn to manage them…you learn that it is not convenient to do those deliveries where there are no more pickups, because then you will add the return route where you will be unloaded of orders, right? You will pedal for free…then, it's very important that where you're going there's something else."
>
> (Giovanni, 46, M)

As Giovanni points out, it is not only important how much the delivery is paid. It is essential that "where you're going there's something else" to avoid making what he calls the "unloaded routes": driving without orders in charge, and therefore without being paid. Accordingly, days poor of "unloaded trips" and "big tubs"[5] are those where, as Dolores notes, the algorithm made you run well.

> "Last Monday in 7 hours I made 80 euros, only going back and forth between Corso Garibaldi and Chinatown, all day long… they are super easy deliveries, and at the end of the day you say "I'm not even tired". There is also *the algorithm that made you run well*, then there are also bad days, like today… they wanted to send me from here to pick up in Corso Garibaldi and then to Via Tortona… but guys, it's one thing if between one delivery and the other I arrive from here to via Tortona… you send me from here to Buonarroti, from there to Washington - and so…so the algorithm makes you run well, but when it wants you to do 7 km in one go…you say: "but why?"
>
> (Dolores, 30, F)

As these instances show, riders become "algorithmically recognizable" (Gillespie, 2014, p.184) by virtue of their geo-localization which, recursively, constitutes a main dimension upon which they can articulate the algorithm in the practice. By distinguishing between good and bad orders, good and bad city areas, riders enact

5 Big tubs are those long routes with no possibility of taking shortcuts.

a practical understanding of the functioning of the algorithms entangled with a practice-referred knowledge of the city. With the latter, I mean a way to conceive the urban space that is oriented by the goal of the practice or, in Schatzki's terms (2001), by its teleological structure: to optimize the amount of money gained by delivering within a limited time. By conceiving the urban space, a rider pays attention mainly to what matters for that specific practice – e.g. the concentration of restaurants and offices – while ignoring other nodes of the city – e.g. the concentration of clubs. The analytical distinction between a knowledge of algorithms and a knowledge of the city makes the difference insofar as they do not rely on the same source of learning. Basically, one could be an algorithmic-competent rider while knowing very little about the geography of the city, and vice versa[6]. Also, it clarifies that an algorithmic imaginary hardly operates in isolation while it is interwoven with other competencies relevant to the practice. In this case, mobilizing a practice-referred knowledge of the city, a rider can make the informed decision of accepting or rejecting a delivery with criteria other than the mere price of the gig, as I did in the opening fieldnote ("for sure, it is paid more than the average"). Elaborating a practice-referred mental map (Lynch 1960), a rider can distinguish the areas where to work more proficiently, evaluating each gig in relation to its spatial coordinates. In such evaluative process, the urban "material arrangement" (Schatzki 2010) is assigned of a practice-referred meaning consistent with the algorithmic logic of the orders allocation. For bicycle riders, for example, working in mainly pedestrian areas increases the possibility of higher fees because the platform sets the rate of each delivery on the basis of the route calculated by Google Maps according to the modality of transportation by car, without considering the route actually travelled to fulfil the delivery. Therefore, working in pedestrian areas enables one to make shorter trips than those recommended by the app, gaining the same amount of money. As Santiago said:

> "the further away you go from downtown Milan, the closest you get to... to do the routes like a car... for example... you go north, to Bicocca, those places... you get offered 6 euros... you can trust you are going to cycle like crazy, you are going to do at least 6 km or 6,5 km... why? Because, you know, in that area... it's only streets, wide streets, so if you get paid that amount of money in the north part of Milan, be prepared to pedal... because you are going to follow almost the same route as a car, pretty much the same, the same... it's a completely different world up there... but downtown that's when it gets beneficial for us, for people on bikes..."
>
> (Santiago, 30, M)

6 As instance, this is what happens to an expert rider whereas he decides to work in another city, confirming that "the nature of knowledge depends upon the practice at hand and the site-ness within it", and that "shifting sites necessarily implies some shifting in the knowing" (Nicolini 2011. p.605)

This is thoroughly illustrated by Antonio, a rider working with an electric bike, in the following episode:

> I'm chilling out with Antonio in Lambrate [...] Several riders on motorbikes are hanging on waiting to pick up their delivery in the restaurant next to us. He says: "you see here, wide streets, long orders, the prevalence of motorbikes, too much speed to be competitive with my e-bike. I'm competitive downtown, in pedestrian areas, because there you're competitive with bicycles. [...] The delivery from downtown... by downtown restaurants, about a three km long... that's mine, that's an e-bike one because a regular bicycle is too slow for that distance and a motorcycle would be slow because you would have to park it and then walk the remaining distance... so that delivery is mine, for those who have e-bikes, or those who can handle working many hours on bikes"
>
> (Fieldnote, 13/6/2020)

Santiago and Antonio's mental maps are strictly referred to the work-practice at stake. What I want to stress is that their ability to discriminate between different areas of a city is the result of a learning journey with the job, which reflects the entanglement of different sources of knowledge (algorithms-related or not). Experiencing an algorithm-mediated space, then, means also learning the spatial coordinates relevant for the work-practice: what the roads to reach the places look like (e.g. if there are pedestrian areas). Many riders even remember what the buildings where the orders are addressed look like: if they have an elevator, if it is possible to leave the vehicle inside, or if the delivery comes from regular customers who are inclined to give tips. These seemingly trivial details are fundamental for recognizing a good delivery.

7. THE ALGORITHMIC-MEDIATED PRODUCTION OF TIME

Besides its spatial arrangement, riders' work practice is defined by a specific temporal structure. Time-related issues are crucial to riders, who must literally fight against their limited amount of time to optimize their incomes. As Santiago argues:

> "the longer we wait, the more we lose, it's some kind of battle against time, the more you deliver, the more you win, so you need to save as much as possible when it comes to time...save time...save time...so when it comes to waiting time, that's our worst enemy, because this is just where we lose money."
>
> (Santiago, 30, M)

Aside from driving faster through the city and other work tricks, saving time has

much to do with the accurate selection of orders – e.g. rejecting those coming from restaurants that make couriers wait for a long time – calling into question the classificatory issue related to evaluating a gig. That is, again, a matter of knowledge.

> At the beginning, I couldn't choose anything because I didn't know anything; I used to go everywhere... now, if a delivery takes 20 minutes and they give me 3 euros, I don't take it, because it's not profitable for me... either because it's far away, or I know that the restaurant takes too long, or that the customer will make me wait... that's how you choose a delivery: you have to evaluate all these things that above all affect the time it takes to complete it and how much money they give you...if I know that it takes me half an hour to make a delivery but they give me 6.50 euros for it I'll do it gladly, because in any case in the other half-hour I'll make 3, 4 euros, and I'd have easily made 10 euros in a hour. Then, it's not a matter of speed, it's a matter of head.
>
> (Valentino, 36, M)

Time issues also concern the temporal organisation of the work within the day and the week. As Southerton observes, temporalities are organised collectively (2003). For instance, the temporality of food-delivery work arises from how different practices – food-consumption practices and food-production practices above all – are connected (Blue 2019; Shove et al. 2012). Obviously, deliveries are more concentrated at lunch and dinner times, especially at weekends. In order to boost riders to work during the so-called "high-demand hours", platforms as Glovo and Deliveroo penalize those who do not attend them by reducing their rating, thus impacting on further possibilities to book work hours. In the case of Glovo, this modality is even more perverse: the platform registers the number of deliveries made each night of the weekend, and it compares them with those made 28 days before. If a rider worsens his performance, his rating loses as many points as the number of deliveries missed. Such algorithmic prescriptions constraint the temporal organisation of the practice by virtue of weaving its rhythms in terms of calm and rush times, creating what Southerton calls the "hot spots" (2003, p. 20), those moments when "the sense of feeling harassed and constantly worried about 'time'" (ibid.) is concentrated. On those occasions, as the following ethnographic note shows, a great part of the riders' ability to "gain control over the temporal rhythms" (Southerton 2003) lies on their algorithmic imaginary.

> Today is a diamond[7] day, but few orders are coming in. Giovanni is quite desperate because last month he delivered 10 orders, and if he doesn't confirm this number tonight, he will lose as many points on his rating as the number of deliveries missed. [...] From the height of his experience, Andrea tells him that a rider should never ever get to "make 10 diamonds" on a Saturday,

7 Graphically, the Glovo's app marks with a diamond those slots corresponding to high-demand hours.

> in May, because “summer months are around the corner, ready to bite into your rating". Giovanni answers that Glovo does not allow refusing deliveries over a certain amount. And Andrea replies: "But it's not just about refusing deliveries...this is where the real mischief comes in...picking up an order late or delivering it voluntarily late...for example, if you have made 3 orders and you would have to do 4 orders to balance what you did 28 days ago... you are half an hour away from the end of your shift and you receive one... you accept that one, but you take it veeeeery calmly, you may pedal as you do when you are in holiday...otherwise, you may close the order later, and if Glovo calls you say: "oops, sorry, I didn't notice". In that way you don't get any more orders, and you don't have to re-assign anything.
>
> (Fieldnote, 16/6/2020)

This episode shows that learning how to “manage time”, to “save time” or to “have a certain rhythm” is strictly related to the interaction with algorithms. An ultimate example of the sort is the idea of “working for the rating”, which expresses a different way to work on the weekends compared to weekdays:

> “during the weekend, I almost don’t care about money, *I work for the rating*, I care about the numbers of deliveries that I make, and so I accept only short ones even if they are paid badly [...] But this also means you shouldn’t do too many deliveries. If you do 9,10,11 deliveries on Saturday night, then, the next month you will need to make at least the same number of orders, and maybe it’s summer already, the overall demand is less, and your rating will easily fuck up”
>
> (Dolores, 30, F)

Deciding to gain less today to grant future income in a stable way entails an ability to discriminate between good and bad gigs that stems from a certain algorithmic imaginary. *Working for the rating* expresses a specific way in which algorithms are practically understood, a way of using algorithms that shapes the practice wherein they are situated. In this vein, it is worth observing that selecting orders is also associated with a higher income. Drawing on the ethnographic findings, the orders’ rejection was employed in the survey as a proxy variable of riders’ algorithmic imaginary[8]. The following graph (Figure 2) shows a difference of income between riders who refuse at least one orders’ per day (the curve in red) and those who never reassign orders (the curve in blue). On average, the former earns 187,50 €[9] more than riders who do not refuse orders.

8 As we observed, rejecting orders lies on the competence to evaluate each delivery

9 For all the interviewees, the income was collected for the month of May 2020, in order to neutralise possible distortions linked to seasonality or occasional events. Data were elaborated by means of a regression model where: number of working hours, the platform, length of employment, place of residence (inside or outside Milan) and

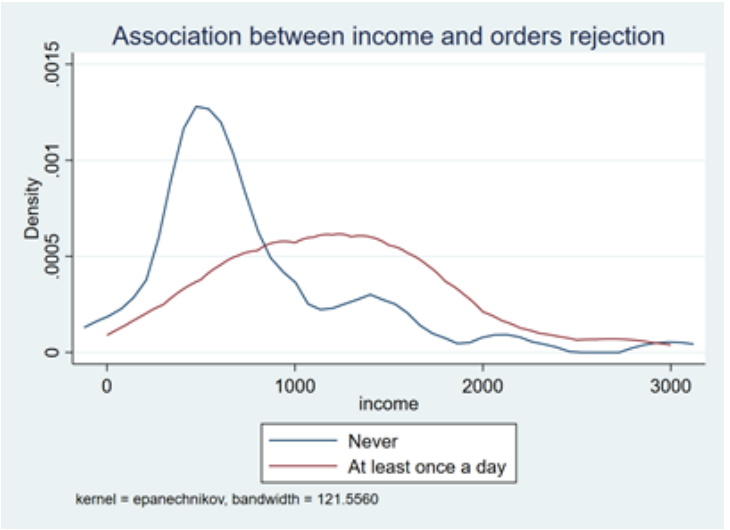

Figure 2 Association between income and daily orders' rejection. Graph elaborated with Stata by the author

This graph, we argue, confirms the heuristic benefit of conceiving the interaction with algorithms as a "site of knowing" (Nicolini 2011). As a source of practical knowledge, the algorithmic imaginary also affects the immediate consequences of the work-practice wherein it operates namely, riders' remuneration.

8. CONCLUSION

In this paper, I have focused on the everyday experience of food-delivery workers to illustrate how a certain algorithm imaginary operates. I understood the algorithmic imaginary as a form of practical knowledge, and I stressed that, far from operating alone, it is interconnected with other competencies germane to the practice. In the last two sections, I discussed the phenomenology of such encounters, focusing on the spatial and temporal experience of the work. While many of the instances discussed in this paper constitute a form of negotiation of the algorithm power, I am more reluctant to label them as practices of resistance, as it is quite common in the literature. First, rather than the purposive intention to resist something, Andrea and the other riders express a professional orientation towards the work, resulting from articulating the algorithms procedures into the work experience (Gillespie 2016). Second, if understood as a form of resistance against the management control, Andrea and Dolores

vehicle (normal bicycle/e-bike or motor vehicle) were used as regression variables of control. The regression enables to exclude that such association is spurious. Also, it shows its statistical significance ($p<0.05$). Despite the high variability of the values distribution of the second curve (certainly accentuated by the small sample size), if compared with a rider average monthly income calculated with the same dataset (m=1041€), a difference of 187.85€ (18%) is noteworthy.

tactics remain confined within the perimeter of the "opportunities built in the labour process itself " (Ferrari & Graham 2021, p.10) and little is known about their efficacy. As Massimo observed in his ethnography of Amazon distribution centres (2020), deviations from algorithmic prescriptions can still comply with the underlying organisation of the work. Thus, riders will likely end up normalising the mechanism of labour control rather than subverting the logic behind the technological infrastructure (ibid). Finally, if we look at the relationship with technology in a narrow sense, the category of resistance is inconsistent with the theoretical framework of this study. Representing riders as more or less resistant to the power of algorithms lies on a vision of the technology as a tool in the hands of the management, against which workers can only resist or succumb. On the contrary, I advanced an understanding of the meaning of such interaction from the riders' point of view, the social agents who enact and classify it in terms of greater or lower experience often as a claim of professionalism. Thus, this article argues that riders are more than workers subjected by technologically mediated control. Most of all, it invites to see them as (more or less) competent workers: people who have learnt to do this job, contributing to define the canon of an occupation with a very weak standard both on a legal and praxeological point of view.

In conclusion, two final remarks about the limits and the potential developments of this study. First, focusing on the phenomenological encounters between algorithms and riders, I mostly addressed how an algorithmic imaginary operates, rather than how it is constructed over time through experience and learning. As the first field note shows, part of this learning occurs on an individual level, resulting from what Shove, drawing on Giddens (1992), defines as the reflexive self-monitoring of the practice-as-performance. Conceived as integral to the practice, these moments provide "practitioners with feedback on [their] outcomes and qualities" (Shove et al. 2012), enabling them to determine what it means to do well – i.e. what it means for a delivery to be a good one. Recursively, self-monitoring informs the way how the practice evolves. Moreover, algorithmic imaginaries are collectively constructed in different micro-aggregations of workers that spontaneously gather in the city or in social media and group chats. Frequently, these micro-communities of workers display collective folk theories of algorithms (Ytre-Arne & Moe 2020) that are integral to the daily sharing of the work experience. Exploring how this knowledge is socially produced, and how it changes in different micro-communities of workers, is definitely destined to further contributes.

Second, as the graph reported above shows, the algorithmic imaginary I tried to illustrate here does not belong to all the riders that I had the chance to meet. Maybe, not even to most of them. I would even argue that assuming everyone to be aware of the computational functioning of algorithms is anything but obvious. A certain algorithmic imaginary is the result of a learning journey by means of participation in a practice that, as Lave and Wenger point out, "is performed in a number of social places, each of which entails different power and influence" (1991, p.81). To question what standard this occupation will take, further studies should consider more accurately the heterogeneity of social positions from which this work is practiced and represented.

Francesco Bonifacio is a PhD candidate in Sociology, organization, culture at the Catholic University, Milan. His main research interests focus on the platform economy and, overall, on the role of platforms, algorithms and datafication in social phenomena. Before, as part the Horizon 2020 project *Harvest*, he has studied the relationship between aging and digital technologies.

9. BIBLIOGRAPHY

Aragona, B., Arvidsson, A., & Felaco, C. (2020). Introduction. Ethnography of algorithms. The cultural analysis of a sociotechnical construct. *Etnografia e ricerca qualitativa, 3/2020*, 335-349. https://doi.org/10.3240/99548

Barratt, T., Goods, C., & Veen, A. (2020). 'I'm my own boss…': Active intermediation and 'entrepreneurial' worker agency in the Australian gig-economy. *Environment and Planning A: Economy and Space, 52*(8), 1643–1661. https://doi.org/10.1177/0308518X20914346

Beer, D. (2017). The social power of algorithms. *Information, Communication & Society, 20*(1), 1–13. https://doi.org/10.1080/1369118X.2016.1216147

Blue, S. (2019). Institutional rhythms: Combining practice theory and rhythmanalysis to conceptualise processes of institutionalisation. *Time & Society, 28*(3), 922–950. https://doi.org/10.1177/0961463X17702165

Bourdieu, P. (1990). *The Logic of Practice*. Stanford University Press.

Bucher, T. (2018). *If…Then: Algorithmic Power and Politics*. Oxford University Press.

Chan, N. K., & Humphreys, L. (2018). Mediatization of Social Space and the Case of Uber Drivers. *Media and Communication, 6*(2), 29–38. https://doi.org/10.17645/mac.v6i2.1316

Cheney-Lippold, J. (2011). A New Algorithmic Identity: Soft Biopolitics and the Modulation of Control. *Theory, Culture & Society, 28*(6), 164–181. https://doi.org/10.1177/0263276411424420

Cheng, M., & Foley, C. (2019). Algorithmic management: The case of Airbnb. *International Journal of Hospitality Management, 83*, 33–36. https://doi.org/10.1016/j.ijhm.2019.04.009

Diakopoulos, N. (2014). *Algorithmic Accountability Reporting: On the Investigation of Black Boxes*. https://doi.org/10.7916/D8ZK5TW2

Ferrari, F., & Graham, M. (2021). Fissures in algorithmic power: platforms, code, and contestation. *Cultural Studies, 0*(0), 1–19. https://doi.org/10.1080/09502386.2021.1895250

Gandini, A. (2019). Labour process theory and the gig economy. *Human Relations, 72*(6), 1039–1056. https://doi.org/10.1177/0018726718790002

Gerber, C., & Krzywdzinski, M. (2019). Brave New Digital Work? New Forms of Performance Control in Crowdwork. In S. P. Vallas & A. Kovalainen (Eds.), *Work*

and Labor in the Digital Age (Vol. 33, pp. 121–143). Emerald Publishing Limited. https://doi.org/10.1108/S0277-283320190000033008

Gherardi, S. (2016). Sociomateriality in posthuman practice theory. In A. Hui, T. Schatzki, & Shove, E. (Eds.) *The Nexus of Practices*, (pp. 50–63). London: Routledge. https://doi.org/10.4324/9781315560816-11

Giardullo, P. (2020). Algoritmi, dati e piattaforme. In P. Magaudda & F. Neresini (Eds), *Gli studi sociali sulla scienza e la tecnologia*, (pp. 207-222). Bologna: Il Mulino.

Giddens, A. (1992). *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press.

Gillespie, T. (2014). The Relevance of Algorithms. In T. Gillespie, P.J. Boczkowski, Foot K.A. (Eds.). *Media Technologies: Essays on Communication, Materiality and Society*, (pp. 167-193). The MIT Press. https://10.7551/mitpress/9780262525374.001.0001

Gillespie, T. (2016). 2. Algorithm. In B. Peters (Ed.) *Digital Keywords*, (pp. 18–30). Princeton University Press.

Goods, C., Veen, A., & Barratt, T. (2019). "Is your gig any good?" Analysing job quality in the Australian platform-based food-delivery sector. *Journal of Industrial Relations, 61*(4), 502–527. https://doi.org/10.1177/0022185618817069

Goodwin, C. (1994). Professional Vision. *American Anthropologist, 96*(3), 606–633. https://doi.org/10.1525/aa.1994.96.3.02a00100

Griesbach, K., Reich, A., Elliott-Negri, L., & Milkman, R. (2019). Algorithmic Control in Platform Food Delivery Work. *Socius, 5*. https://doi.org/10.1177/2378023119870041

Irani, L. C., & Silberman, M. S. (2013). Turkopticon: interrupting worker invisibility in amazon mechanical turk. *CHI '13: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/2470654.2470742

Jansson, A. (2013). Mediatization and Social Space: Reconstructing Mediatization for the Transmedia Age. *Communication Theory, 23*(3), 279–296. https://doi.org/10.1111/comt.12015

Jarrahi, M. H., & Sutherland, W. (2019). Algorithmic Management and Algorithmic Competencies: Understanding and Appropriating Algorithms in Gig Work. In N. G. Taylor, C. Christian-Lamb, M. H. Martin, & B. Nardi (Eds.), *Information in Contemporary Society*. (pp. 578–589). Springer International Publishing. https://doi.org/10.1007/978-3-030-15742-5_55

Kaine, S., & Josserand, E. (2019). The organisation and experience of work in the gig economy. *Journal of Industrial Relations, 61*(4), 479–501. https://doi.org/10.1177/0022185619865480

Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at Work: The New Contested Terrain of Control. *Academy of Management Annals*. https://doi.org/10.5465/annals.2018.0174

Lave, J., & Wanger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.
Lynch, K. (1960). *The Image of the City*. MIT Press.
Manriquez, M. (2019). Work-Games in the Gig-Economy: A Case Study of Uber Drivers in the City of Monterrey, Mexico. In S. P. Vallas & A. Kovalainen (Eds), *Work and Labor in the Digital Age* (Vol. 33, pp. 165–188) Emerald Publishing Limited. https://doi.org/10.1108/S0277-283320190000033010
Marrone, M. (2021). *Rights against the machines! Il lavoro digitale e le lotte dei rider*. Milano-Udine: Mimesis.
Massimo, F. S. (2020). Burocrazie algoritmiche. Limiti e astuzie della razionalizzazione digitale in due stabilimenti Amazon. *Etnografia e ricerca qualitativa, 1/2020*. https://doi.org/10.3240/96824
Newlands, G. (2021). Algorithmic Surveillance in the Gig Economy: The Organization of Work through Lefebvrian Conceived Space. *Organization Studies, 42*(5), 719–737. https://doi.org/10.1177/0170840620937900
Nicolini, D. (2011). Practice as the Site of Knowing: Insights from the Field of Telemedicine. *Organization Science, 22*, 602–620. https://doi.org/10.1287/orsc.1100.0556
Pasquale, F. (2015). *The Black Box Society: The Secret Algorithms That Control Money and Information*. Harvard University press.
Rahman, H. A. (2019). *Invisible Cages: Algorithmic Evaluations in Online Labor Markets*. Stanford University press.
Reckwitz, A. (2002). Toward a Theory of Social Practices. A Development in Culturalist Theorizing. *European Journal of Social Theory, 5*(2), 243–263. https://doi.org/10.1177/13684310222225432
Richardson, L. (2020). Platforms, Markets, and Contingent Calculation: The Flexible Arrangement of the Delivered Meal. *Antipode, 52*(3), 619–636. https://doi.org/10.1111/anti.12546
Rosenblat, A. (2018). *Uberland: How Algorithms Are Rewriting the Rules of Work*. University of California press.
Rosenblat, A., & Stark, L. (2016). Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers. *International Journal of Communication, 10*(0), 27.
Schatzki, T. (2010). Materiality and Social Life. *Nature and Culture, 5*(2), 123–149. https://doi.org/10.3167/nc.2010.050202
Schatzki, T. R. (2001). Practice Mind-Ed Orders. In T. R. Schatzki, K. Knorr-Cetina, & E. von Savigny (Eds.). *The Practice Turn in Contemporary Theory*, (pp. 42–55). London-New York: Routledge.
Shapiro, A. (2018). Between autonomy and control: Strategies of arbitrage in the "on-demand" economy. *New Media & Society, 20*(8), 2954–2971. https://doi.org/10.1177/1461444817738236
Shove, E. (2016) Matters of practice In A. Hui, T. Schatzki, & Shove, E. (Eds.) *The Nexus of Practices*, (pp. 155-168). London: Routledge.

Shove, E., Pantzar, M., & Watson, M. (2012). *The Dynamics of Social Practice: Everyday Life and How it Changes*. London: Sage https://doi.org/10.4135/9781446250655

Southerton, D. (2003). `Squeezing Time': Allocating Practices, Coordinating Networks and Scheduling Society. *Time & Society, 12*(1), 5–25. https://doi.org/10.1177/0961463X03012001001

Stark, D., & Pais, I. (2020). Algorithmic Management in the Platform Economy. *Sociologica, 14*(3), 47–72. https://doi.org/10.6092/issn.1971-8853/12221

Striphas, T. (2015). Algorithmic culture. *European Journal of Cultural Studies, 18*(4–5), 395–412. https://doi.org/10.1177/1367549415577392

Tassinari, A., & Maccarone, V. (2020). Riders on the Storm: Workplace Solidarity among Gig Economy Couriers in Italy and the UK. *Work, Employment and Society, 34*(1), 35–54.

Vallas, S., & Schor, J. B. (2020). What Do Platforms Do? Understanding the Gig Economy. *Annual Review of Sociology, 46*(1), 273–294. https://doi.org/10.1146/annurev-soc-121919-054857

Van Dijck, J., Poell, T., & De Waal, M. (2018). *The Platform Society: Public Values in a Connective World*. Oxford University Press.

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. https://doi.org/10.1080/1369118X.2017.1294194

van Doorn, N. (2018). *Thoughts on Deliveroo's introduction of distance-based pay in Berlin*. Retrieved from https://platformlabor.net/blog/thoughts-on-deliveroos-introduction-of-distance-based-pay-in-berlin

van Doorn, N., & Badger, A. (2020), Platform Capitalism's Hidden Abode: Producing Data Assets in the Gig Economy. *Antipode, 52*(5), 1475–1495. https://doi.org/10.1111/anti.12641

Veen, A., Barratt, T., & Goods, C. (2020). Platform-Capital's 'App-etite' for Control: A Labour Process Analysis of Food-Delivery Work in Australia. *Work, Employment and Society, 34*(3), 388–406. https://doi.org/10.1177/0950017019836911

Velkova, J., & Kaun, A. (2021). Algorithmic resistance: Media practices and the politics of repair. *Information, Communication and Society, 24*(4), 523–540.

Wacquant, L. (2015). For a Sociology of Flesh and Blood. *Qualitative Sociology, 38*(1), 1–11. https://doi.org/10.1007/s11133-014-9291-y

Woodcock, J., & Graham, M. (2019). *The Gig Economy: A Critical Introduction*. Polity Press.

Ytre-Arne, B., & Moe, H. (2020) Folk theories of algorithms: Understanding digital irritation. *Media, Culture & Society, 43*(5). https://doi.org/10.1177/0163443720972314