

Odds Stacked Against Workers

Labor process gamification on Chinese and American food delivery platforms

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Abstract

This article presents a cross-national comparative study that examines how American and Chinese platform companies approach the gamification of food delivery. The study, based on ethnographic fieldwork in New York City and Beijing, highlights how couriers in both cities negotiate the gamified systems designed to convince them to log in and keep working. We argue that the deeply financialized industry of platform-based food delivery compels companies to implement data-driven gamification techniques, in an effort to manipulate their flexible labor supply in the most agile and cost-effective way possible. Accordingly, we posit gamification as not only a salient form of “algorithmic management” but also as a central pivot connecting labor process datafication to financialization. Through an analysis of couriers’ experiences with two nationally distinct approaches to labor gamification, we challenge existing understandings of algorithmic management that are largely based on the operations of Western platforms.

Introduction

The impacts of labor market manipulation on the working conditions and livelihoods of platform workers has been a topic of growing concern within the critical social sciences. In the emerging cross-disciplinary literature on “algorithmic management”, for example, the design and deployment of dynamic pricing algorithms, automated incentive and evaluation schemes, and

information asymmetries has drawn extensive scrutiny globally (e.g. Lee et al., 2015; Rosenblat and Stark, 2016; Shapiro, 2018; Ivanova et al., 2018; Griesbach et al. 2019; Veen et al. 2019; Wu et al., 2019). This literature has produced groundbreaking evidence of how labor platforms are constantly experimenting with ways to manage a contingent and dispersed workforce of independent contractors who, in principle at least, can decide when and how much they work. Building on this evidence, it has offered a convincing argument against popular narratives that herald the freedom and flexibility of gig work, highlighting instead the various techniques through which platform companies seek to control the labor process and outcome at scale.

What is so far missing from this field of research, however, are studies that 1) compare platform strategies and their impacts on workers across urban or national markets, and 2) situate specific techniques of labor control within the broader political economy of platform capitalism. Responding to these knowledge gaps, we present a cross-national comparative study that examines how couriers in New York City and Beijing negotiate the workforce management strategies deployed by on-demand food delivery platforms seeking to regulate their flexible labor supply. Drawing on ethnographic fieldwork, we highlight the differences and similarities with respect to how American and Chinese platforms mobilize data-driven gamification techniques, demonstrating how these techniques impact the daily work patterns, income opportunities, and wellbeing of couriers in these cities.

The notion of gamification designates “the design approach of implementing elements (affordances, mechanics, technologies) familiar from games to contexts where they are not commonly encountered” (Warmelink et al., 2018, p. 1108). Crucially, the implementation of game-like elements (e.g. competition, rule-following, point-scoring, tracking accomplishments, advancement measured in levels) in the governance of logistical labor has been facilitated by the

proliferation of internet-connected, data-intensive sensor technologies, including those integrated into contemporary smartphones (Warmelink et al., 2018; Deterding, 2018). The data generated by couriers' smartphones forms the condition of possibility for on-demand food delivery and drives platform companies' ongoing quest for profitability by way of service optimization, which leads us to posit gamification as a central pivot connecting datafication and financialization. As we argue below, it is through datafied gamification techniques that platform companies seek to maintain and regulate their labor supply, while gradually decreasing the costs associated with labor in response to (potential) investors' expectations regarding their long-term financial performance. Providing a concrete illustration of "how the labor process is implicated in value creation and extraction under financialization" (Cushen and Thompson 2016, p.353), gamification should thus be conceived as a device through which the logics and objectives of global finance capital translate into locally situated strategies of algorithmic labor (market) control.

Whereas the literature on algorithmic management tends to take for granted the construction of the sociotechnical environments in which algorithms become operative in the first place, we start section one by taking a closer look at how food delivery has been "platformized" – i.e. reconfigured into a datafied on-demand service orchestrated by a platform. After sketching the material conditions of possibility in which data-driven gamification techniques can be designed and implemented, we zoom in on how couriers' wages have been reconfigured and rendered susceptible to gamification. Section two discusses our methodology and introduces the local particularities of the New York and Beijing food delivery markets. We then present and juxtapose our research findings in sections three and four, providing a comparative analysis of labor process gamification that draws connections across markets while

also illuminating the different processes of negotiation and struggle taking place among couriers in each city. In our conclusion we summarize our findings and contributions to the study of algorithmic management and the gamification of work, offering some reflections on how different design approaches to labor process gamification take shape in particular markets.

1 - The platformization and gamification of food delivery

Following Agre, we understand food delivery as an “activity system” that has to be methodically deconstructed, mapped, and modelled in order to become susceptible to a process of platform-mediated *capture*. Agre’s capture model “describes the situation that results when grammars of action are imposed upon human activities, and when the newly reorganized activities are represented [i.e. tracked] by computers in real time” (1994, p.109). Here we briefly apply the five recursive stages of Agre’s model to food delivery, in order to sketch the conditions under which gamification techniques can be designed and elaborated.

During the first stage, Analysis, startups study food delivery as “an existing form of activity” and identify “its fundamental units in terms of some ontology” (Agre 1994, p.109). In this case, the ontology describes: the basic *entities* (e.g. restaurants, customers, couriers, orders); the *relations* between these entities; the *functions* of each entity, and the *primitive actions* (e.g. order processing, cooking, packaging, biking or driving, money transaction, tipping, etc.). In the second stage, Articulation, operations and product managers work together with engineers to “articulate a grammar” for these units and actions, producing a model that represents “a complete, closed, formally specified picture of the activity” (ibid.). This grammar “is then given a normative force” during stage three, Imposition, when “people who engage in the articulated activity are somehow induced to organize their actions” according to the grammar’s rules (ibid.).

For example, couriers are generally expected to notify the platform via their app each time they 1) accept an order, 2) arrive at the restaurant, 3) pick up the food, 4) arrive at the customer's address, and 5) drop off the food and complete the order. This process of Imposition would not be possible without the fourth, largely parallel stage of Instrumentation, during which the “[s]ocial and technical means are provided [...] for maintaining a running parse of the ongoing activity” (ibid.). Once a food delivery platform has equipped restaurants, customers, and couriers with their respective user applications and has instructed them on how to deploy these instruments, they begin “to orient their activities toward the capture machinery and its institutional consequences” (ibid.).

The final stage in the capture cycle is Elaboration: “captured activity records [i.e. data], *which are in economic terms among the products of the reorganized activity*, can now be stored, inspected, audited, merged with other records, subjected to statistical analysis [or predictive analytics]” (ibid., emphasis ours). It is this process of continuous elaboration that provides platform companies with such granular algorithmic control over their activity systems and thus over the tracked work patterns of their courier fleets, which are translated into data inputs informing the ongoing adjustments to food delivery's labor process. The grammar constitutive of this labor process increasingly includes game-like elements. Deterding (2018, p. 1) highlights the importance of data-intensive digital platforms to contemporary processes of gamification: 1

[A]ll games (and gamified systems) require a reliable way of tracking player actions, while any tracked behavior is a game in waiting: just add goals and feedback. So as human work and everyday life are shifting onto digital platforms and sensors are increasingly pervading our physical world, more and more human behavior can be digitally tracked – and gamified.

Akin to Agre's Elaboration stage, platform-mediated gamification operates through cybernetic procedures insofar as it does not hinge on immutable grammars of action, but requires feedback loops that "drive desired behaviors" in a dynamic manner (ibid.). Because the capture model "permits efficiency and control to be treated separately," captured workers enjoy a higher degree of freedom, which is however always circumscribed precisely because this operational separation enables "work activities to be [iteratively] disciplined through aggregate measures derived from captured information" (Agre, 1994, p. 117). In other words, "captured information" – i.e. data – enables food delivery platforms to "govern through contingency" (Dillon, 2007), by continually recalibrating of the rules of their games based on courier behaviors.

Notwithstanding the granularity of data-driven control, securing an optimal service capacity in volatile on-demand markets remains a challenge for any food delivery platform. In order to coax freelance couriers to log into the app, start accepting orders, and keep doing so for as long as is needed, food delivery platforms have had to transform the notion of a wage and gamify how it is paid out (Woodcock and Johnson, 2018). Whereas, traditionally, couriers work directly for a restaurant that pays them a set hourly or daily wage (with expected tips), most food delivery platforms have switched to a piece-rate model in which couriers are paid per delivery. Paying couriers per delivery allows companies to "redefine elements of the working day as 'non-productive' time" beyond the scope of paid work (Moore and Newsome, 2019, p.4). Moreover, gamified delivery-based payment schemes come with particular "reward schedules" whose irregular "hit frequency" can have a powerful effect on the behavior of couriers who can no longer count on the security of an hourly wage (Dow Schüll, 2012).

Bonus pay schemes, meanwhile, can be understood as "secondary incentives" that function as a "game-within-a-game", operating "in dynamic concert with the payout schedule of

the base game, serving as a second layer of reinforcement” (Dow Schüll, 2012, p. 133). Such schemes are often represented in the visual language of a video game, turning an incentive into “an ongoing challenge” (Munn 2017, p. 10). As Munn argues, “[t]he combination of responsive data and real-time messaging thus transforms a dry offer into a gamified mission, harnessing the kind of level-up logic and micro dopamine hits that are well understood in the gaming and gambling industries” (ibid.). Likewise drawing comparisons to gaming and gambling, Mason (2018) reflects on her own experiences as a Lyft driver to highlight how such gamified missions afford worker-players sense of relative autonomy and control over the labor process. Gamified incentive schemes turn what may otherwise feel like a succession of repetitive tasks into a series of challenges that offer drivers choices and opportunities to win money by “hitting” various bonus targets. Echoing Burawoy (1979), Mason notes how hitting these targets subsequently tends to reproduce drivers’ “commitment to playing, and their consent to the rules of the game”, even when the value of bonus incentives and base pay decreases (Mason, 2018, n.p.). While this resonates with our findings, we will also show how couriers in NYC and Beijing are increasingly questioning platforms’ rules of the game as well as their own commitment to playing.

2 – Methodology and comparative market overview

This article draws together ethnographic data from our respective research projects for a cross-national comparative study of labor process gamification in platform-mediated food delivery markets. As is well established, cross-national comparative analysis comes with an array of methodological challenges and pitfalls (Livingstone, 2003), such as the risk of assessing “incomparable units belonging to different contexts” (Azarian, 2011, p. 121). At the same time, a comparative approach enables researchers to discover broad trends across national settings while

highlighting their particularities, thereby “challenging claims to universality” (Livingstone, 2003, p.479). The account we present in the next section highlights two parallel yet divergent trajectories of labor process gamification, complicating existing understandings of algorithmic control that implicitly take the operations of Western platforms as the universal standard (for exceptions, see Chen, 2018; Sun, 2019; Wu et al., 2019).

The fieldwork in NYC was conducted over a seven-month period between February and August 2018. Van Doorn conducted 33 semi-structured interviews (40-150 minutes) with couriers operating primarily in Manhattan. Couriers were between 19 and 48 years of age, the majority being in their mid/late twenties. Thirty couriers identified as male. Most participants were African American (13) or first- and second-generation immigrants, primarily Latino (9), three of whom were undocumented. The sample also included three Asian American and six White American couriers.

The fieldwork in Beijing lasted seven months, from March to late August 2018, and covered four city districts. In total, Chen conducted 46 semi-structured interviews (60-90 minutes) with riders working for the three leading platforms in China. The sample contains 15 “crowdsourced” riders and 31 riders working in other arrangements. Participants were all male migrant workers (ages 18 to mid-40s) from outside Beijing.

While the “post hoc” nature of our comparative study prevented us from producing a perfectly balanced comparative study in which our research questions and fieldwork strategies would have been coordinated in advance, it has nevertheless yielded valuable new insights into the “convergence and deviations” (Azarian, 2011, p. 118) of gamified food delivery as a global phenomenon that is locally articulated. We started with an open discussion comparing our ethnographic research in NYC and Beijing, from which a number of issues related to the

platform-mediated labor process and financial incentives emerged. We then conducted a thematic analysis of the ethnographic data. Five interviews from each site were selected and analyzed by both authors to identify salient themes, which led to a focus on gamification techniques, couriers' perception and experience of dynamic wages, and the overall labor process. During this procedure, we continually compared, contrasted, and revisited our respective analyses of the data. This collaborative analytical process thus allowed us to “grasp the context-specific meanings attached to the phenomena” constitutive of on-demand food delivery in each city (Azarian, 2011, p. 122). Moreover, it pushed us to consider how such context-specific meanings are informed by national as well as local (labor) market developments and dynamics. We take these factors into account in the following comparative market overview.

New York City

New York City's food delivery history reaches back as far as the post-WWII economic boom. Food delivery has historically been the work of immigrant men – many of them undocumented – who are often informally employed by restaurants, exposing this already vulnerable population to a lack of labor protections, underpayment and recurring wage theft (Lee, 2018). In 2012 this informal sector was estimated to precariously employ about 50,000 workers, making New York the nation's largest food delivery market (Miller, 2017, quoted in Lee, 2018, p.85). This enormous growth in demand was boosted by popular online food ordering platforms such as Seamless and Grubhub (merged in 2013), which in the early/mid-2000s started aggregating the menus of partnered restaurants and – in exchange for a commission – handled their order and payment processing. This was also the time when investors became interested in the food delivery business. Until about the mid-2010s, however, it was the restaurant's responsibility to

arrange the costly – because labor-intensive – business of delivery, which limited the growth potential of this emerging industry.

The next wave of American food delivery startups took advantage of the widespread adoption of smartphones as well as the persistent under-regulation of food delivery work in the US, offering outsourced delivery solutions to (sit-down) restaurants for whom this service had previously been cost-inhibitive due to the notoriously low margins of the restaurant business. With the arrival of startups like Postmates (founded in 2011), Caviar (2011, acquired by payment company Square in 2014, then bought by DoorDash in 2019), DoorDash (2013), and Uber Eats (2015), food delivery transformed from an informal and economically marginal sector into a highly competitive industry where the problem of low margins could (at least temporarily) be ignored during a series of venture capital-infused growth spurts (Haddon and Jargon, 2018).

In New York City, the abovementioned companies are locked in an ongoing battle over market share, even as the overall food delivery market keeps expanding (Rieck, 2019). Grubhub, the publicly traded industry incumbent that launched its own delivery fleet in 2015 in order to raise its profile in this new space (Shah, 2015), remains by far the largest player in the city: leveraging its dominant online presence and extensive network of partnered restaurants, it boasts a 67% market share (Rieck, 2019). However, the company has been losing ground to Softbank-backed DoorDash, whose recent rounds of funding has skyrocketed the company's valuation and allowed it to purchase Caviar, strengthening its NYC position while gaining the largest market share nationwide (Cheng, 2019; Rieck, 2019). Meanwhile, Uber Eats – also backed by Softbank – and Postmates are not relenting, knowing that customers are increasingly less loyal and can be won with promotional prices (Rieck, 2019). This means that the battle of attrition is likely to

continue in the foreseeable future, as companies seek to leverage their raised capital to undercut competitors.

Couriers in NYC are even less loyal than customers, likewise benefiting from the promotional incentives offered by the various competing companies. Many couriers – who usually find their way to food delivery platforms via friends or through online ads – are signed up with multiple companies and alternate between different apps. While each company runs its app-mediated “activity system” slightly differently, they all build on a dispatch model whose lineage can be traced back to the bike messenger and taxi businesses. Because couriers are signed up as independent contractors, however, what would otherwise be an order becomes an “offer” that couriers – officially, at least – may ignore or reject. Couriers’ decision to work with an app depends on which company in their view offers the best payouts and bonus incentives on any given day or week, which means they effectively treat their apps like slot machines (cf. Dow Schüll, 2012).² For most of the interviewed couriers who depend on food delivery for their livelihood, their entire work flow is geared toward the maximization of their various income streams, which are in turn greatly impacted by the gamified incentive schemes each platform rolls out via its app. Table 1 provides a short comparative overview of the pay incentives deployed by Uber Eats, Postmates, and Caviar, as couriers’ experiences with these platforms featured most prominently in the interviews.³

Table 1: Incentive Schemes in NYC Market

	Multipliers (Increase the value of each order; time- and location-contingent)	Gamified incentive schemes (Bonus or guaranteed payouts upon completing X number of orders within set time frame)
Uber Eats	Boost Pay	Quests
Postmates	Blitz Pay	<ol style="list-style-type: none"> 1) Bonus Per Delivery 2) Guaranteed Earnings 3) Crushers (high-volume bonus) 4) Tiered Guaranteed Earnings (based on tiered order volumes)
Caviar	Peak Hour Pay	<ol style="list-style-type: none"> 1) One Day Milestones 2) Ongoing Milestones

Beijing

The rise of online platforms has integrated food-delivery into the urban eating habits of Chinese city dwellers. Statistics show that in 2018, the daily average of platform-orchestrated food deliveries in Beijing reached more than 1.8 million (Xinhua News, 2018). As of 2018, two companies—Ele.me and Meituan Waimai (hereafter Meituan) jointly control over 90% of the platform-organized food-delivery market in China. Ele.me, which is now a subsidiary company of Alibaba, had 3 million registered riders (Ele.me, 2018).⁴ Meituan belongs to Meituan Dianping, which had 531,000 daily active riders in 2017 (Meituan-Dianping, 2018).

The platform-mediated food delivery industry is characterized by a diversification of rider types (Table 2), which corresponds to the historical dominance of informal labor practices in China. Using third-party labor dispatch agencies in particular, common in manufacturing and service industries, has existed in China long before the rise of digital platforms, pointing to long-term loopholes in labor market regulation (Huang, 2017). The loopholes in labor market regulation persist in platform-mediated services such as food-delivery (Sun, 2019).

Table 2: Different Types of Riders in China

Rider type	Employer	Labor contract	Base salary
Platform-hired rider	Platform company	Yes	Yes
Subcontracting rider	Third-party labor agency	Mostly no	Mostly no
Crowdsourced rider	Self-employed	No	No

The three types of riders face different working conditions and are managed differently (Table 2). The first two types of riders wait for orders to be dispatched and usually work full time within specific districts. Freelance, so-called “crowdsourced” riders face no distance restrictions on the orders they can take. They can also choose between the dispatch mode and the “grab” mode (抢单, *qiangdan*). While the dispatch mode works no differently for crowdsourced riders than the platform-hired or subcontracting riders, the “grab” mode allows crowdsourced riders to see a list of multiple delivery requests, from which they can choose which orders they wish to deliver.

This “grab” mode design was previously introduced on Chinese ride-hailing platforms such as DiDi.

Due to this diversification of working arrangements, the deployment of gamified incentives is more varied and elaborate on Chinese platforms compared to the US context. All riders are hierarchically ranked into different levels, each of which corresponds to a minimum requirement gained through proper service fulfillment, which is determined by a number of factors including the number of fulfilled orders, points gained, on-time rate, and five-star customer reviews. Sometimes, a five-star customer review means extra bonus (¥2). The higher a rider’s level reaches, the higher their earnings will be (Sun, 2019). Given that hired full time riders earn their wage based on a fixed payout per completed order, each level effectively functions like a multiplier applied to this set piecework rate.

However, the payment schemes for crowdsourced riders is more complex and their wages are more volatile. First, because there is no distance restriction, payments for each order that shows up on the crowdsourced rider’s screen includes the rate for the order as well as several bonuses contingent on variables like distance, difficulty, weather, and peak times. The rate fluctuates from ¥5 to over ¥10. Secondly, crowdsourced riders participate in a weekly open competition and their completed number of orders is reset every week, meaning that they are prompted to maintain a similar output to retain their level. If they fail to do so they could be demoted - and the further they are demoted, the fewer bonuses are available. Thirdly, a crowdsourced rider’s level is also associated with a number of level privileges (Voorhees, 2009) and the eligibility to participate in particular promotion schemes (Table 3). As will be demonstrated in the sections below, the gamification of wages cultivates a constant calculative attitude among crowdsourced riders regarding the value of levelling up.

Table 3: An example of a weekly promotion scheme for Ele.me crowdsourced riders

		Gold	Silver	Bronze
The criteria for participation	Completed orders	≥ 190	≥85	≥14
	On-time rate	≥95%	≥90%	≥85%
Level privileges	Limits of stacking orders	11	9	6
	Extra bonus for each order	yes	yes	yes
	Weekly lucky money	yes	yes	no

Having provided an overview of the NYC and Beijing food delivery markets, we now turn to the comparative analysis of our ethnographic data. We start with a discussion of the short-lived “golden days” during which couriers in both cities could make a lot of money.

3 - The Bygone Golden Days

One salient theme among the more experienced couriers in both cities was how things used to be much better. In the early days of platform-orchestrated food delivery in NYC, for instance, companies loaded with venture capital and eager to gain market share were generating a buzz by offering high wages and free perks. As Danny, a 28-year old Latino man born and raised in Staten Island, remembers:

When Uber started their thing, they broke in[to the market], they said "We need messengers, we need people on bikes." They gave us iPhones, they gave us batteries, they gave us bike racks, they gave us bags. They had us interview, we came in for an interview, and they said, "Boom, take this," because the app only worked with iPhones, so they just gave us an iPhone. It was pretty much locked to only the Uber app, but still, they just handed out all this money to us. The base rate, if you were online and accepted an order it was guaranteed \$30 an hour.

This was UberRUSH's promotional strategy back in 2015,⁵ around the same time that Grubhub began contracting its own courier fleet, likewise offering high hourly guarantees in an effort to compete with existing platforms such as Postmates, Caviar, and Doordash. Whereas Danny initially signed up to all the companies and navigated between their apps to take advantage of the large payouts, Eric – a 28-year old White New Yorker – started out by focusing most of his time on Postmates:

Oh god, I did a lot. Probably 10 to 12 hour days, six/seven days a week. From September [2015] to May [2016] I was killing it, the amount of money I was making and freedom - I was making, on a Friday, on a good Friday, a good Saturday, like 275-\$300. I'd only have to do about 15 orders.

These high earnings were possible because, according to Eric, Postmates would add large Blitz multipliers (between 1.5 and 2) to every order during the lunch and dinner rush, while also guaranteeing a minimum payout of \$5 per delivery. Then he was introduced to Caviar by some fellow couriers and not long after signing up he "had \$1,400 pay weeks". While these were great earnings for him at the time, he also realizes now that he "got into the loop with Caviar a little bit

too late, right when they just started pay cutting. Listen, all these guys who were dedicated to Caviar before, these guys man, they experienced prosperity in this city. Yes, they did.” One of these guys is his buddy Ed, who has been working with Caviar for four years. Ed, a Puerto Rican man in his late thirties with two kids, used to make between \$2,100 and \$2,400 per week, but those days are long gone and he gets upset when explaining what happened:

Let me tell you something, Caviar, when I started with Caviar [late 2014], the pay that I mentioned earlier to go from here [West Village] to [inaudible] street, \$18. Beautiful. On top of that you get 18% of the total of the order as your automatic tip no matter what. Then they start lowering the pay, then they take that [automatic tip] off...

To make matters worse, Caviar also started decreasing its Peak Pay, leading to a further deflation of earnings over time. Eric and Ed agree that it was toward the end of 2016 that the golden days were over in NYC and things started going south. Ed thinks it’s because “they got popular”. He continues: “They got more people in the platform, so now they feel that they got more options, that they can do whatever they want to do with the pay. Like play with the pay, lower it to see who's willing to take it. You see what I'm saying?” Akin to Eric and Ed’s experience in NYC, Qi offers the following account of the transition he witnessed while working for Ele.me in Beijing:

I earned a hefty wage in 2017...in April or May, I made about ¥10,000 (\$1,455) a month [the median monthly wage in Beijing in 2017 was \$983]... There were few riders then and many subsidies. After people heard the stories about how good food delivery was paid, they all came. The more workers are available, the less subsidies are offered. The pay is just average now.

“Senior” riders like Qi, in his 20s and a migrant worker from a village in the Henan province, likewise experienced a brief period of prosperity marked by decent wages, generous incentives and other kinds of rewards like extra money for five-star customer reviews. During this period, which lasted from 2015 until late 2017, Beijing’s food delivery market quickly expanded and companies were dealing with a shortage of labor supply. Qi’s coworker and fellow villager Zou also joined Ele.me as a platform-hired rider during the golden days of 2015. Zou is in his 40s and has a 10-year old daughter who stays with his wife in their hometown. When Zou started out with Ele.me, he enjoyed a guaranteed minimum wage of ¥4500 per month and “many kinds of subsidies”. At that time, the company subsidized their riders’ phone bills, data plans, and costs for meals and battery-charging, which amounted to about ¥400 per month. Additionally, there was an “extra allowance for working during hot weather” and Zou found bonuses easy to collect as well. After all deductions and taxes, Zou usually took home ¥6,000-8,000 per month and, echoing Qi’s experience, it “was not difficult” to earn ¥10,000. The golden days were short-lived, however, and the subsequent changes to the wage were dramatic. By the end of 2016, Zou’s monthly guarantee minimum wage had dropped to ¥3,000 and then in April 2018 it further decreased to ¥1,560. The declining wages did not stop there:

Most of the subsidies were gone. You know, it costs me ¥6 per hour to charge my e-bike, which means a cost of ¥400-500 that is uncovered now. The reward system for five-star customer reviews was also changed into a three-smiley face rating system. Only when customers clicked the far right smiley face, I would be rewarded ¥2. This makes it more difficult for me to earn the rewards. For this category alone, my bonus dropped to less than ¥100.

Overall, the incentives offered by food delivery platforms in NYC and Beijing have become more capricious and less rewarding over time. Whereas subsidized payout and referral bonuses were initially mobilized without much reserve in order to quickly expand the labor supply, they are now being deployed in a more prudent and targeted manner to stop people from leaving at a time when intensified competition puts increasing pressure on already low profit margins. For the private companies operating in NYC, the problem of low margins could be ignored during the early “roll-out” phase of their service due to the constant influx of investment capital, whose objective was rapid expansion. Yet even as the market continues to expand and companies such as DoorDash keep raising massive amounts of capital, the disappointing IPOs (and subsequent stock performance) of Uber and Lyft, not to mention the WeWork debacle, have also led to growing concerns regarding the long-term sustainability of this “growth at all cost” business model (Schulze, 2019). Now that Grubhub is no longer the only publicly traded company and DoorDash as well as Postmates are allegedly looking to go public in the near future (Rieck, 2019), American food delivery platforms are faced with the pressure to improve their margins and show a road to profitability. On the Chinese market, meanwhile, Meituan likewise prioritizes its ability to increase profit margins now that it is a publicly traded company. In its financial reports it identifies riders’ labor costs as the major contributor to the cost of revenue of its food delivery business and provides evidence that it has successfully reduced the ratio of cost and revenue in 2018 (Meituan, 2019).

Accordingly, for American as well as Chinese platform companies the pursuit of shareholder interests “drives forms of value extraction based on squeezing labor costs” and, consequently, “it is within the labor process that interventions prompted by [...] speculative firm valuations confront ‘a moment of truth’” (Cushen and Thompson, 2016, p.358). This moment of

truth pertains to platform companies' ability to beat their competitors by deploying the most cost-efficient incentive schemes that sway couriers to keep logging in and completing deliveries despite diminishing returns. The crucial point here is that *data-driven gamification techniques are deployed as instruments to achieve this objective*, as they are designed to reproduce drivers' "commitment to playing [the game of food delivery], and their consent to the rules of the game" (Mason, 2019, n.p.). Equally important, however, is the fact that the design of these techniques does not follow a uniform template across the globe. In the following section, we show how couriers in NYC and Beijing negotiate and struggle with two distinct design approaches to the gamification of food delivery.

4 – Gamifying food delivery: two design approaches

NYC: Deal or No Deal

When waiting for incoming delivery offers, which is often referred to as receiving a "ping", couriers in NYC are faced with questions like "When will I get my next ping?", "When I don't get one for a while, what may be the reason?", and "When I do get one, what happens if I reject the offer – how will it affect my future income opportunities?" Such questions reflect the uncertainty generated by the irregular "hit frequency" of the dispatch system's algorithmic "reward schedule" (Dow Schüll, 2012). This uncertainty is exacerbated by dynamic delivery pricing schemes, which reconfigure the piece-rate wage into a hyper-contingent variable. In addition to the previous questions, couriers also ask themselves "When I get my next ping, *how much will they offer me?*" and "If I reject the offer, will the next offer be *better or worse?*" As Dow Schüll notes about machine gambling, the most potent behavioral reinforcement can be

achieved through schemes “in which subjects never know when they will be rewarded, or how much” (2012, p. 108). Loosely resembling the game show Deal or No Deal, which also comes in a slot machine format, platform-orchestrated food delivery in NYC consequently becomes a game-like experience in which couriers are constantly evaluating variable offers – substituting for set wages. As noted earlier, bonus incentives and guaranteed pay schemes form a gamified “second layer of reinforcement” designed to smoothen the deal and get/keep couriers on the road (Dow Schüll, 2012, p. 133).

Danny has noticed how Postmates “has gotten a little smarter” these days and has “dropped the money” significantly. Besides discontinuing the high Blitz pricing on orders during busy periods, Postmates also started offering “stacked” deliveries for pickup at the same restaurant. While this expedites the delivery process it also decreases the payout per order because, as Danny explains it, “[a batch of three deliveries] has turned into one delivery now and so your base payout is still \$4: you get three drop offs, \$3 for this, you get \$1 for the pickup, now you have \$4. You've already made your minimum and then you get paid on whatever else [e.g. distance fees]. That's how they've cut down.” Danny usually justifies his acceptance of stacked orders by reasoning that they increase his tips, but he also points out how Postmates’ Guarantee scheme plays a crucial role in his decision- making process:

This is another thing, right? Look, I complete nine deliveries between five and nine to earn at least \$80, so now they have these guarantees, right? That's where that batch thing comes into play. Where it's like, [...] "I'll take a fucking batch. I don't care what the payout is. I don't care what the tips are, if I hit nine, I'm gonna be guaranteed 80 bucks [...] It's a way for them to guarantee that they have you working for those hours."

Yet with more people out there pursuing what appears like a guaranteed minimum income, Danny has come up short on multiple occasions and – as he suggests above – at one point this scheme seems to function more like a labor supply guarantee for Postmates than an income guarantee for its “delivery partners”. His experience resonated during an interview with José, a 26-year old Latino man born and raised in the city’s northern suburbs, who claims to make most of his money by participating in incentive schemes like Postmates’ Guarantees. Without these schemes, he reasons, food delivery work just wouldn’t provide a viable livelihood these days:

If you're only going to get \$4 for a delivery that's been prepped for half an hour, then you're going to make less than minimum wage at the end of the day. You have to rely on the good graces of someone who's going to tip you. In the end, it's unsustainable unless there's a fixed aspect of the whole job, and that's the bonuses. That's the guarantees.

While José appreciates how guarantees add a “fixed aspect” to an otherwise unpredictable income stream highly contingent on tips, he has also noticed that guarantees are ultimately less “fixed” than they seem: “They'll tell you, ‘If you're out there and you make the deliveries, we'll give you the money.’ But if you're out there and you don't make seven [deliveries], you're not going to get any of the promise, you'll just get whatever you got.” There were several instances when he was waiting for his seventh delivery, monitoring his progress on his app, but nothing came in during the last minutes of the guarantee’s runtime - a phenomenon reminiscent of contrived “near-miss-effects” in the gambling industry (Dow Schüll, 2012, p.95). “Then I make \$25 as opposed to \$70, and that adds up. Over the course of two days that means I'm going to make \$100, \$200 less.” After about three years of depending on food delivery as his main source of income, he is getting tired of platforms acting shifty with respect to the rules of their games,

and he has been reconsidering his options – which are limited due to his lack of a college diploma and a car. The more he thinks about it, the idea of a steady job that earns a “real wage” is growing increasingly appealing:

I thought I could just hustle for it and it would work out. I'm realizing there's too many variables involved for me to rely on Postmates. There's too much arbitrary shit that they impose on you as a company for you to make any goals that are based on Postmates.

The problem of unreliability, which has increased over time, likewise pertains to Caviar according to Ed and Eric. Ed, who also works from home as a day trader and claims that this business taught him a lot about psychology, runs it down as follows:

Let me explain you this; shiny object syndrome is they show you what they want you to see. Let's say this key here, they show you this key, they dangle it in front of you and then they go right into your pocket [...] Now what Caviar does is they show you, for example, \$10 for every three orders. Right? [...] But what they do is, a trip pays \$7 and they're going to give it to you for \$5, they lower the price [...] Because basically what I see them doing is they cutting up your own money they was supposed to pay you, to make up for the bonus that they're giving you.

This bait-and-switch was a prevalent source of frustration. While many couriers were initially excited about pursuing the “shiny objects” designed to persuade them to play, they gradually grew more sensitive to the “purposive obfuscation” that gamified incentive schemes accomplish (Dow Schüll, 2012, p.78; Rosenblat and Stark, 2016; Griesbach et al., 2019). Eric was upset about the trick that Caviar pulled as he was working toward his monthly Milestone, which had

recently become “easier to hit” with an order completion target of 275 (instead of 315) for an extra \$150 at the end of the month. While he was happy that Caviar lowered the target, he also worried about having earned about \$30 less on the first day this new Milestone went live: “So is it really easier to earn to get the same amount of [bonus] money when they're cutting \$3 on every job? [...] You don't actually get extra money.” Not every courier might notice this, however, and platform companies are increasingly leveraging their behavioral data to design activity systems and incentives that exploit cognitive biases or limitations (Deterding, 2018; Calo and Rosenblat, 2017). Caviar, in this case, can gauge what deals (i.e. Milestones) particular groups of couriers will accept under certain circumstances and at specific times, based on their previous activity. The company’s objective is to then gradually change the terms and conditions associated with this deal to its financial advantage.

Eric acknowledged that you could occasionally still make good money with these companies, but – echoing José – he nonetheless insisted that incentive schemes have become too inconsistent to provide a reliable income stream: “They’re telling you just come out on certain days, when you feel it’s worth it. But I can't depend on that because I can't fucking tell that to my landlord. My landlord wants to see a fucking check for \$800.” The nine couriers hanging out on a West Village stoop one afternoon concurred that the city’s food delivery market is likely to get more insecure as bonus targets become harder to hit and competition gets more “cutthroat”. One of them shared his fears that eventually all good financial incentives will disappear:

At first they will give you a really good [...] bonus [...] But then what's going to happen?

Probably a hundred of us are going to start doing Uber for like two weeks. We're probably going to get certain bonus. Some of us are going to manage to get good money out of it, but after that the app is going to take all those bonuses away and start taking certain stuff little by little.

In the face of such strategic corporate taking (Calo and Rosenblat, 2017), couriers feel powerless and this affects how they view themselves and their peers. Whereas some liked to think of themselves as players, Eric now says: “I see myself as a pawn, just like everybody else. We're all being used, but I have the ability to be a lone wolf and to me my performance shows in my pay.” He is proud of his performance and of the money he has been able to make by working hard at getting better at the game, but, like José, he is also getting tired of this work and realizes that it will not provide a sustainable income for much longer. This is why he is “learning to do something better on the side that I can turn into money”, having teamed up with a friend who is teaching him editing skills so he can work in audio engineering. At the moment, Eric is in the process of “diversifying” his life and he hopes that new income opportunities will eventually offer “a way out”: “I slaved myself with this for about three and a half years. I'm going on my fourth winter now. This is the last full-time winter.”

If the design of gamified incentive schemes is intended to reproduce couriers' commitment to playing the food delivery game (Mason, 2019), this approach to gamification clearly has its limits. Indeed, Deterding warns that “[w]hen play is made mandatory or has [...] serious concerns and consequences attached to it”, people experience it as “thwarting autonomy, motivation, enjoyment, and any sense of play” (2018, p. 3). Most interviewed couriers no longer enjoyed the game that food delivery companies had engineered for them – if they ever did in the first place – and vowed to stop accepting any new deals as soon as better income opportunities materialized.

Beijing: Grab-and-Stack

In Beijing, crowdsourced couriers do not wait for offers to appear but proactively “grab and stack” available deliveries listed on their app. In the “grab” mode, riders can see the full trip and price information for these requests and can also refresh the pool of orders to get new listings – a common practice among riders referred to as “refreshing orders” (刷单, *shuadan*). They claim the jobs they want to take by clicking the button named “*grab the order*”. Couriers usually personalize the settings for incoming orders using sorting preferences (e.g. by distance or by price). The functionality of stacking multiple orders is gamified (see Table 3) in such a way that Chinese crowdsourced riders can decide which orders to take and how to combine multiple orders based on an assessment of order features and geographical knowledge. In contrast to NYC couriers, they face questions like “Will I get more rewards or reach a higher rank if I grab and stack more orders available to me?”, “If I stack as many orders as I can, can I deliver them on time?”, and “If I don’t stack orders, can I make enough money?”. Food delivery work is thus turned into a different kind of strategic game that valorizes constant calculation (cf. Shapiro, 2019), providing a more open choice architecture that invites courier behaviors focused on “using exploits and min/maxing strategies that optimize *measured* performance and individual payoff” (Deterding, 2018, p.3, emphasis in original).

Just like Danny would accept batched orders in the hope of receiving more tips, stacking multiple orders becomes nearly compulsory for Chinese crowdsourced riders faced with a base rate of about ¥5 for orders within a one kilometer radius. Moreover, the open competition resets the completion number to zero each week and thereby intensifies the workload by repeatedly creating a blank slate for riders who seek to maintain or surpass their existing outputs. If they fail to do so, their capacity to stack orders will decrease, which directly impacts the extent to which

they can make a living. Although, at first glance, the grab-and-stack arrangement may thus offer riders more freedom than the dispatch model, this freedom is ultimately deployed to drive them to achieve efficiency and productivity gains *for the platforms*. Treating efficiency and control separately allows Chinese platforms to “govern through contingency”, by using crowdsourced couriers’ behavioral data as input for the ongoing optimization of the grab-and-stack game (Agre, 1994; Dillon, 2007).

Lu, in his early 30s, comes from a village of about 4000 people in a province adjacent to Beijing. He lives with his wife in Beijing but their child remains in their hometown. Lu used to work as a dispatcher in an express delivery warehouse for ten years, but then he grew tired of earning a “fixed wage” (“死工资”, literally meaning “dead” wage) of ¥4000 every month so, in 2016, he started to work as a Meituan crowdsourced rider. A self-imposed discipline geared toward stacking more orders is evident in Lu’s objective to always “combine eight or nine orders” and in the organization of his work routine to pursue the targeted stacked number. According to Lu, who needs to complete at least 35 orders every day in order to maintain his level, grabbing and stacking just two or three orders is “not worth it” because “wasting” 45 minutes to an hour for “a bit more than ¥10 does not make ends meet” - especially when counting the cost of charging his e-bike. Yet only rush hours with a surge in demand and an associated surge pricing make it possible for Lu to stack the desired eight or nine orders. Accordingly, Lu organizes his schedule around rush hours. The surge pricing during the rush hours and the possibility to stack more orders coax Lu to attune his work performance to the fluctuations of market demand, in accordance with the top-down gamification design of the platform seeking to optimize its operations (Woodcock and Johnson, 2017).

Although Lu usually takes a break between 2-4pm, his work day is quite intensive and stressful, particularly because he has to “constantly refresh orders” and “pay attention to [the ticking] clock” even when he is on the road. One dilemma riders face when stacking orders is that the delivery time is not cumulative, meaning that the additional orders do not help extend the overall delivery time by a simple addition. For all orders, before they are posted, the requested delivery times are set by the algorithms. Once riders grab and stack the orders, they must be attentive to the time left for each order. The work stress is all the more intensified during the peak hours, when riders share the feeling of being pressed for time and are frequently forced to rush despite possible traffic hazards (Shepherd, 2017). To ensure customers’ on-demand need is fulfilled in a timely manner, platform companies all inflict financial penalties in response to delays. As Lu points out, “a deduction of ¥1 for one-minute-delay, ¥2 for two-minute delay, but if you have stacked orders the deduction is cumulative, meaning that a one-minute delay for the second order would be a fine of ¥2.” When taking into account the relatively low base rate, financial penalties for delays are “severe” and a half hour delay, as Lu puts it, “can easily cost you half a day’s worth of work. To make up the loss, you have to keep working and stacking more orders.”

Even someone like Zhu, who shows no interest in climbing the hierarchical ladder, finds himself “motivated” by the weekly competition and thus always meets his self-imposed goals, which indicates a widespread “consent” to the gamified labor process among riders (Burawoy, 1979). Zhu, once a factory worker who earned ¥1500 a month in Henan province, is currently a Silver rider on Meituan. He was talked into doing in food-delivery by his friend, who claimed that the job earns “a minimum ¥3,000 and can be as high as over ¥10,000”. Compared to his previous factory job, Zhu likes the “freedom of working any time I want”, the idea that he has

“no supervisor”, and knowing that he earns “an easy daily wage of ¥100 or ¥200.” He needs to complete 200 orders per week and keep at least a 95% on-time rate to maintain the Silver level which gives him an extra ¥200 bonus. Zhu admits:

The Bonus motivates me. Look, if I have worked for five days in a given week – two days left, [my app] shows how many orders are needed to get the ¥200 bonus, say 20 orders., you must try your best to complete the goal, regardless of whether they are nearby or long-distance orders. With uplifting spirit. Get ¥200!

As Agre argues, “the ultimate use of [captured data] measurement is the establishment of bidding for services in real-time markets, whereby the control previously provided by bureaucracy is transferred to the inherent discipline of the market” (Agre, 1994, p. 117). What the gamified apparatus of grab-and-stack achieves by leveraging open market competition in combination with financial penalties, is to propel riders to continually discipline themselves in order to maintain – if not improve – their work performance. Moreover, riders’ seeming control over which/how many orders to grab is further diminished when platforms start to automate the process of stacking, as Ele.me has done. This subjects riders to further opaque algorithmic controls in a gamified labor process engineered to serve the platform’s interests (Rosenblat and Stark, 2016). Ele.me’s operational adjustment – from allowing riders to manually stack orders to automatically stacking orders that algorithms have determined are “on your way” – is something that frustrates Ji, a crowdsourced rider in his 20s who joined the platform in the winter of 2017. Previously, the platform showed all orders to everyone whose settings match, so the competition is “open and only depends on [individual’s] ability. As long as one acts quickly enough, s/he will

get those nicely-paid orders.” Especially during peak times, “a dozen or even two dozen new orders” after one refresh, “are gone immediately” if grabbed “slowly”. Ji continues:

But now once you grab an order in [say,] a school district, the system *simplifies* the grab-and-stack process by giving you the option to see the orders it determines to be on your way. But I will never see any orders to the school district if I did not successfully grab one in the first place. I felt it’s... *unfair* in spite of it being more automatic and *smarter*.

The new order-stacking algorithm effectively excludes riders whose routes are judged not to match the planned order trajectory from seeing the latest order, thus keeping them from entering grab-and-stack’s open competition. Ji believes this happens because the two platform companies that now control the market “do not care about fairness with respect to couriers [...] There are only benefits and no harms to platforms no matter who grabs the orders.” The increasing level of uncertainty over the rules of gamified labor process, as shown in these recent transformations on Ele.me, demotivates Ji’s participation. He cannot see himself being a rider five years from now. What he wants is “to save some money in the next two or three years and open a restaurant offering food-delivery service”. Ji is not alone in perceiving food-delivery as a transitory job. Zou, who experienced the golden days and saw his wage plummet over the past two years, has started to consult with friends about the possibility of becoming a driver on a ride-hailing platform.

Conclusion

This article has examined the differences and similarities with respect to how American and Chinese food delivery platforms mobilize data-driven gamification techniques, highlighting how

these techniques impact the daily work patterns, income opportunities, and wellbeing of couriers in New York City and Beijing. In NYC, couriers are trying their best to adjust to an increasingly oversaturated market and decreased earnings, which means they have to work harder for less money. Although it still remains possible to “hit” big bonus targets and cash out – or “make out”, as Burawoy (1979) called winning the game – these opportunities are becoming progressively scarce. As their chances of getting a good deal diminish, it grows more appealing for veteran couriers pursue an exit from the game and look for more stable sources of income. In Beijing, freelance - “crowdsourced” - riders, especially those who recently signed up, see food delivery work as a job that offers them more freedom and opportunity than other available jobs such as factory work. At the same time, there is a growing awareness that the grab-and-stack system intensifies riders’ workload and pushes them to compete against each other in a way that “reinforce[s] market discipline and market attitudes” (Cushen and Thompson, 2016, p. 359).

Utilizing data-driven behavioral science (Kamat and Hogan, 2019), platform companies seek to design increasingly sophisticated choice architectures and incentive (as well as punitive) schemes that respond to couriers’ behaviors in real time, in an effort to optimize the gamification of their labor process. Algorithms certainly play a crucial role in scaling this process, yet the *datafication* of this labor process forms the precondition for algorithmic management and its push toward gamification. Given that the algorithmic management literature has largely glossed over the uses of data/datafication in the context of automated labor process manipulation, we have drawn on Agre’s capture model to highlight and account for these connections.

Furthermore, this article has contributed to the literature on platform labor by positing gamification as a pivotal instrument linking the datafication of gig work to the objectives of finance capital. As Cushen and Thompson (2016, p. 359) note, “financialized investment is a

driver of perpetual restructuring that exacerbates work insecurity and intensification.”

Accordingly, we argue that food delivery platforms are compelled to restructure their app-mediated activity systems according to the demands and expectations of investors. Since these expectations are increasingly oriented toward future profitability rather than growth alone, companies continue to develop ways of driving down costs, which intensifies the precarization of food delivery work. Deal or No Deal and Grab-and-Stack are two design approaches to labor process gamification that ultimately function as divergent means to a common end: regulating the volatile labor supply of American and Chinese delivery platforms in the most agile and cost-effective manner, while convincing couriers that the odds of the game are stacked in their favor as long as they keep playing. Each approach aims to design the most alluring activity system possible within the existing institutional and socio-economic frameworks of New York and Beijing.

In NYC, the Deal or No Deal approach updates the dispatch model of logistical labor management – common among bike messenger and taxi companies – for the age of smartphone-equipped gig workers, closely emulating the design of app-based ride-hailing services. Compared to the Chinese institutional context, the market for on-demand service work is much less segmented given that most labor platforms have adopted the ‘1099’ model, working exclusively with independent contractors. The Deal or No Deal approach can be understood as a design response to this legal arrangement, insofar as it draws on the labor control afforded by the dispatch model while turning orders into “offers” that can be declined – nominally preserving the autonomy of the contractor. The challenge then becomes to design offers/deals that appear too good to be refused, for which platforms mobilize incentive gamification techniques.

The Grab-and-Stack approach has its origins in the Chinese ride-hailing industry, before being redesigned for food delivery platforms. Its popularity can be explained by the ostensibly higher level of autonomy granted to couriers and other types of on-demand service workers. The need to retain market competitiveness and squeeze the costs associated with a highly segmented labor force has propelled Chinese food delivery platforms to adopt both the dispatch and grab models, which allows them to experiment with varied labor management strategies. Beyond gamified financial incentives, which are common to both models, the Grab-and-Stack approach draws on a wider range of gamification techniques that induce forms of strategic and competitive courier behavior not found in New York. Ultimately, then, our cross-national comparative study has shown how the gamification of platform-mediated food delivery does not conform to a universal grammar of action – to use Agre’s term, despite the fact that platform capitalism’s global push toward accumulation and extraction mandates common techniques of labor control.

Notes

¹ Following Werbach (2014, p. 267), we conceive of gamification as a process, which allows for “talk about activities being more or less game-like, without needing to define a point where the designed system crosses over into gamification.”

² Most apps – except those operated by Grubhub and a local company called Relay – allow for “free login”, meaning that they do not use performance metrics to grant couriers tiered access to a self-scheduling tool. Instead, couriers can log in and start working whenever they want.

³ Although Grubhub has the largest market share in NYC, many of the interviewed couriers claimed it was difficult to get on the platform due to the company’s relatively selective and infrequent hiring practice.

⁴ While we have so far referred to food delivery workers as “couriers”, in the European and Chinese context they are usually called “riders”. The Chinese character for “rider” (骑手) shares the first word and the pronunciation with

“Knight” (骑士). See Baidu’s Knight system below. Throughout the article, we use different terms to best reflect their respective contexts.

⁵ UberRUSH is a precursor of Uber Eats. For a brief period, both services operated simultaneously in NYC.

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