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Cooperative affordances: how instant messaging apps afford learning, resistance and solidarity among food delivery workers.

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Abstract

This paper aims to understand the practices and meanings associated with the creation and use of private chat groups on instant messaging services such as WhatsApp, Telegram, Messenger and WeChat that are accessible only to platform workers of online food delivery services. We draw on participant observation in five countries (Italy, Spain, Mexico, China, India), in-depth interviews with 68 food delivery couriers and digital ethnography (Pink et al. 2015) within dozens of online private chat groups of food delivery workers. Our fieldwork shows that private chat groups are extremely relevant in the daily work of delivery workers and are appropriated to restore forms of mutualism not afforded by the food delivery apps. Following Costa (2018) and her concept of affordances-*in-practice*, we describe how the *practice* of online private chat groups created by platform workers affords: 1) the emergence of communities of practice; 2) resistance and contempt 3) mutualism and solidarity. We argue that these workers “enact” the affordances of instant messaging apps, to supplement - *from below* – the affordances of food

delivery apps that were denied or ignored by food delivery companies. We argue that these affordances constitute *cooperative* affordances. This concept captures the cooperative nature of peer-to-peer communication that occurs within the informal online chat groups created by the workers themselves. Finally, this article contributes to affordance theory by highlighting how affordances are not immanent properties of artifacts, or “invariants”, as argued by Gibson (1979), but can be “enacted” by specific users, like food delivery workers, within specific social and cultural contexts.

Introduction and outline

According to Huang, platform-based food delivery represents “a contractual reclassification and technological repacking of the traditional food-delivery service (Veen et al., 2020), with its organisational structure characterised by algorithmic management” (2022: 4). Platform food delivery is a service that has expanded rapidly worldwide, driven by the global spread of smartphones and the rise of urban, young, credit card-owning middle classes accustomed to shopping online. The Covid-19 pandemic erupted in 2020 turned these services into a global mainstream habit (O’Brien 2020). The development of food delivery apps is central to the success of this business: they come with specific affordances that enable a gamified and competitive behaviour that discourage and prevent any solidarity among workers. However, platform workers do not passively adapt to the labour vision coded into the affordances of these platforms. On the contrary, as we will show in this article, many of them have developed practices of resistance and subversion to the affordances of online food delivery apps.

This article draws on participant observation in five countries (Italy, Spain, Mexico, China, India), in-depth interviews with 68 food delivery couriers and digital ethnography within

dozens of online private chat groups created by food delivery workers. We argue that these workers appropriate other technologies, such as instant messaging apps, to supplement - *from below* – the affordances of food delivery apps that were denied or ignored by food delivery companies.

Relying on Costa's (2018) concept of *affordances-in-practice*, we show how the *practice* of online private chat groups created by food delivery couriers affords: 1) the emergence of communities of practice; 2) resistance and contempt 3) mutualism and solidarity. We argue that these affordances constitute *cooperative* affordances. This concept captures the cooperative nature of peer-to-peer communication that occurs within the informal online chat groups created by the workers themselves. In the conclusion, we reflect on the cross-cultural design of this research, focusing on how cooperative affordances are differently experienced in the Global North and the South.

Overall, this article makes three main contributions: 1) it contributes to the debate on communities of practice by showing the importance of instant messaging apps for building supportive bonds, learning tricks of the trade and developing resistance among food delivery couriers; 2) it contributes to the debate arisen in media and communication studies around affordance theory by highlighting how affordances are not immanent properties of artifacts or “invariants”, as argued by Gibson (1979), but can be “enacted” by specific users, like food delivery workers, within specific socio-cultural contexts; 3) it expands the methodological reflections on digital ethnography, by proposing an innovative methodology for the qualitative study of gig workers, based on participant observation within instant messaging apps (Barbosa and Milan 2019).

Affordance theory between technological determinism and social constructivism

As Nagy and Neff (2015) remind us, the theory of affordances provides the link between techno-determinist views and social constructivist ones. However, there is no consensus among the scholars who have used this concept, and its definition remains ambiguous (Nagy and Neff 2015). As pointed out by Davis (2020), affordances are often presented in a binary formulation (afford/not afford), and most importantly, “too often describe artifacts as though they exist in a static and monolithic world” (2020: 40).

The concept of affordance was originally conceived in ecological psychology by Gibson (1979) to designate all kinds of action possibilities latent in the physical environment. Later Norman (1988) introduced it into the field of design and human computer interaction (HCI) by focusing on the power designers possess to enable and constrain users’ actions through their design choices. Within HCI studies, Gaver (1991) introduced the concept of *technological* affordances to study how individual activities are shaped by the environment and how individuals can use its salient features. This interpretation of affordances leans toward the bias of technological determinism, since there is little room for the power of users to shape the environment in turn. Neither Gibson, nor Norman, not even Gaver, considered the cultural aspects that can shape human-environment interaction. The relational aspects of this concept were more emphasized with the transition from psychology to sociology and anthropology. Hutchby (2001a; 2001b) sees affordances as the means to overcome both technological determinism and social constructivism, suggesting that “affordance provides a middle term that both takes into account the ways in which technologies are socially constructed and situated on the one hand, and materially constraining and enabling on the other hand” (Bucher and Helmond 2017: 238).

Along the line opened by Hutchby comes McVeigh-Schultz and Baym's (2015) proposal of *vernacular* affordances, which emphasizes the interpretive, hermeneutic power of users in relation to social media affordances. According to these scholars, affordances are something that emerge from the users as they interact with technological artifacts. In keeping with this

socially situated view of affordances, Nagy and Neff (2015) introduced the concept of *imagined* affordances, emphasizing the weight of users' emotional involvement in interacting with technological artifacts. Finally, Davis and Chouinard (2016) and Davis (2020) made an original contribution to the debate on affordances theory by highlighting the gradient and intensity with which a technological artifact enables or discourages a set of actions.

However, we believe that one of the most original contributions to the development of affordance theory comes from Costa's (2018) ethnographic studies, which allowed her to foreground the concept of *affordances-in-practice*. Costa's (2018) ethnographic data demonstrate "that people use the platform in creative and active ways that both designers and social media scholars have not envisioned" (2018: 3649). She emphasizes the agency of users in shaping, and enacting, the potential affordances inscribed in technologies. Here, affordances are considered as a "set of practices that cannot be defined *a priori* and are not predetermined outside of their situated everyday actions and habits of usage" (Costa 2018: 3643). According to this concept, they are not immanent properties of artifacts, or "invariants", as argued by Gibson (1979), but can be "enacted" by specific users within specific social and cultural contexts. Costa's contribution to the affordances debate is crucial because it foregrounds a more nuanced notion of this concept and emphasizes what STS scholar Dunbar-Hester calls "the flexibility of technology over time" (2014: 129). Building on Costa (2018) and her concept of *affordance-in-practice*, we will demonstrate how workers of online food delivery platforms "enact" the affordances of instant messaging apps, to supplement - *from below* - affordances to food delivery apps that were explicitly denied by the companies' designers.

The affordances of food delivery apps both constrain and enable certain actions but not others. By favouring certain actions over others, they shape the couriers' work, directing their actions. App designers have codified in them their ideas about how couriers should perform this work. At the same time, however, as we will show in the following sections, couriers are able to

“decode” these affordances (Shaw 2017) by negotiating or subverting their meanings, even to the point of appropriating them for purposes not intended by the designers.

Food delivery apps: politics, affordances, resistance

The history of online food delivery is very recent. Some companies, such as the Pizza Hut online delivery service and Just Eat¹ have been around, respectively, since 1994 and 2001, but most have taken off since the second decade of the 21st century². App-mediated food delivery is a service that has expanded rapidly worldwide, especially during the global Covid-19 pandemic (O’Brien 2020): with restaurants forced to close during Covid-related lockdowns, food delivery has become a lifeline to ensure some continuation of business (Keane 2020) and platform couriers became an icon of the global working class at the time of the pandemic. In 2021 the global online food delivery market reached a value of US \$126.91 billion. while new forecasts expect the market to reach \$192.16 billion in 2025 (IMARC 2021).

These apps are technology platforms that enable multi-sided markets (Rochet and Tirole 2003) that mediate relationships between customers, restaurants, and food delivery couriers. These relationships are governed through a series of proprietary algorithms (Popan 2021) that automate and render invisible (Gandini 2019) customer and workforce management processes. These algorithms have been given names by companies like Deliveroo³, that called its algorithmic infrastructure “Frank”. Algorithms like Frank represent the interface between the online food delivery companies and its workers: their code contains the mathematical formula that governs the working time and physical efforts of the couriers. The power of these platforms is therefore primarily computational; the physical performance of the couriers is constantly compared against each other in an invisible competition that never ends. Food delivery apps are designed to enable competitive behaviour through gamification strategies (Jarrett 2022;

author 2022) and a rhetoric discourse based on the neoliberal logic of meritocracy (Authors 2024). These apps facilitate direct communication between the worker and the company via their corporate chats, but any functionality that could favour the construction of bonds between couriers is intentionally avoided, and any form of peer-to-peer communication is disabled. They are designed to establish an individual and vertical relationship between the company and the worker, mediated through a set of algorithms. They intentionally do not afford peer-to-peer workers' connectivity and restrict cooperation and solidarity.

Food delivery apps, then, are digital artifacts that come with specific affordances (Gibson 1979). These artifacts carry inscribed on them the values and ideology of those who created them. As Winner's (1980) classic study argued, all artifacts have politics. He showed that the height of the bridges along the road connecting New York City and Long Island was intentionally calculated to prevent public transportation to pass under them, thus excluding those who could not afford a car and at the same time furthering Long Island's aura of social exclusivity. Similarly, food delivery apps have politics, too. Their politics is to discourage any interaction among their workers. They afford a specific form of governance of the workforce, enforced by algorithms and aimed at building a vertical, asymmetrical and individual relationship with workers (Aloisi and De Stefano 2022). These apps act as intermediaries between couriers and food delivery requests from customers, but they do not afford all workers equally. The algorithms favour those workers who are more willing to work weekends or longer shifts, or who have a higher level of physical dexterity or greater availability of time to spend waiting for an order (Jarrett 2022). Workers cannot benefit equally from the affordances of food delivery apps, not only because of the structural inequality built in these apps, but also because, as Davis (2020) reminds us, the mechanisms of affordances are inseparable from the social and structural conditions in which they are enjoyed by users.

However, platform workers are not passive users of these platforms and have started to negotiate and subvert their affordances. These workers created their own private online chat groups using instant messaging services such as WhatsApp, Telegram, Messenger, Facebook and WeChat to counteract the competitive logic inscribed in the apps of online food delivery companies. They have restored forms of mutualism not afforded by the apps through the creation of online private chat groups. The use of online forums and instant messaging tools is common not only among these workers, but in all sectors of the gig economy and is now well documented by digital labour scholars (Maffie 2020; Woodcock 2021; Abilio et al. 2021; Grohmann and Araújo 2021; Watkins 2022). Jarrett equates the role of these forums to that once played by the shop floor, “providing avenues for workers to gather outside of the direct control of management to voice concerns about their work experience” (2022: 173). James Woodcock illustrated the widespread use of digital platforms such as WhatsApp and Facebook for communication across all platform work, comparing them to “digital watercoolers” (2021: 2). Within these groups, gig workers can truly and freely communicate with each other. As already noted by Maffie, “they find in these groups the comradery and support of their digital colleagues” (2020: 133).

Methodology

This research is part of a larger qualitative inquiry examining the everyday tactics of resistance to the power of algorithms in the domains of gig working, platformized cultural industries and political activism.

We rely on a multi-sited ethnography (Marcus 1995) held between July 2020 and August 2021 in different cities in Italy (Livorno, Florence, Milan, Naples and Messina), Spain (Valencia, Barcelona and Bilbao), India (Delhi, Gwalior, Mumbai, Pune, Lucknow, Chattisgarh,

Gurugram and Patna), China (Beijing, Shanghai, Shenyang, Weifang and Dongguan) and Mexico (Querétaro and Mexico City).

The research team performed 68 semi-structured interviews (7 in Mexico, 32 in India, 12 in China, 12 in Italy, 5 in Spain) to online food delivery couriers between July 2020 and August 2021 and carried out participant observation of the workers' shifts. Some of us also worked as couriers for a couple of weeks, both before and during the interview period, to better understand the gamification mechanisms of the apps and be better prepared for the interviews.

Interviews were made in different cities of both the Global North and South: Querétaro and Mexico City in Mexico; Delhi, Gwalior, Mumbai, Pune, Lucknow, Chattisgarh, Gurugram and Patna in India; Beijing, Shanghai, Shenyang, Weifang, Dongguan in China; Livorno, Florence, Milan, Naples, Messina in Italy; Valencia, Barcelona and Bilbao in Spain. By including both central and peripheral cities, we aimed to provide a balanced assessment of the geographical diversity of each country. This diversity also applies to platforms; we included: Uber, Cabiify, Didi, InDriver, EasyTaxi and Rappi, Sin Delantal, Didi Food, Uber Eats in Mexico; Swiggy, Zomato and Uber Eats in India; for Meituan, Eleme, Flash EX (Shansong) and SF Express in China; Just Eat, Deliveroo, Glovo and Uber Eats in Italy; Uber Eats, Glovo, Deliveroo, Just Eat and Stuart in Spain.

The interviews lasted from 30 to 60 minutes. They were recorded and conducted in the original languages of the couriers (Chinese, Hindi, Italian, Spanish, Mexican Spanish) and then translated into English by the researchers themselves. Interviews were coded according to Grounded Theory (Charmaz 2006). All the names of the interviewees have been anonymized. We are aware of the many concerns and limitations surrounding the translation of concepts into another language (Temple 1997). Translating the interviews transcripts into English was a strategic decision made by the research team leaders in order to give the research team's work

as much visibility as possible. However, we are aware of the limitations of choosing English as the *lingua franca* of the academia (Suzina 2021), and for this reason we have invited all members of the research team to publish individual papers on other aspects of this research in their home languages.

Researchers established a long-distance dialogue via WhatsApp with a selected group of the interviewed couriers during several months and this dialogue was very important to understand some aspects of their work. Some of the interviewees allowed us to follow them during their work-shift and showed us how food delivery apps work. Two Italian workers also agreed to read this article and provided their precious feedbacks.

The interviews were complemented by a digital ethnography (Pink et al. 2015) of dozens of online private chat groups (mainly on WhatsApp, Telegram, Facebook and WeChat) created by the couriers. For a full year, we observed thousands of couriers interacting with each other in these private chats. Private chats are enabled by apps like WhatsApp and Telegram. They are cross-platform messaging apps allowing users to exchange messages over a phone's data traffic without paying extra for short-text messaging and have been proved very effective in fostering peer-to-peer communication in both contemporary media activism (Barbosa and Milan 2019) and gig labor (Woodcock 2021). Studying activists' and workers' social interactions within the chats enabled by these apps allows researchers to observe social dynamics over time and provides a huge wealth of data. Conducting ethnographic research within instant messaging apps, then, is an innovative practice within the field of digital ethnography, but also presents significant ethical challenges. Barbosa and Milan ask themselves "how to develop a creative approach to digital ethnography that did not harm or interfere with the interactions among chat members?" (2019: 53). In accessing this new field of research, we followed the model proposed by Barbosa and Milan (2019) based on the "do

not harm” principle in private chat groups. We started asking to join the workers’ private groups in July 2020 and once we had been admitted by the administrators, we posted a message to inform group members of the research and to announce that some of them might be invited to an interview at a later stage. Admittance was granted to us thanks to prior acquaintance with some of the chat group members, that worked as trusted intermediaries. We guaranteed full anonymisation to research subjects and transparently explained our research agenda, according to the approach suggested by Barbosa and Milan (2019).

In April 2021 the research team met online for a workshop where every member of the team presented their findings and provided feedback on each other. This workshop enabled us to refine our understanding of gig workers’ daily practices of resistance and let emerge common patterns of analysis.

Findings

The fieldwork revealed many common practices among couriers from different countries, both from the Global North and the South. We argue that online private chat groups run by food delivery couriers are indispensable safety nets and represent informal bazaars where all kinds of exchanges take place and are vital to the survival of every worker. In these environments, workers discuss the dynamics of the algorithm and “gossip” around it (Bishop 2019), develop different levels of algorithmic awareness (Eslami et al. 2015; Gran et al. 2021) and build bonds of solidarity (Maffie 2020; Tassinari and Maccarone, 2020; Anwar and Graham 2021; authors 2022).

Being invisible to the eyes and control of the food delivery corporations, these private chat groups afford a space of freedom and discussion to their members. However, they are not the solely means used by couriers to build solidarity, exchange information and organize collective actions. They act within a complex ecology of devices, both offline and online (Author 2019),

that makes these actions possible and facilitates the exchange of information, job skills, tricks of the trade, and solidarity. Couriers also resort to other digital tools to learn the tricks of the trade, meet other workers and exchange valuable information about their work. In China, for example, they follow couriers on the Douyin platform, a kind of working-class influencers who give advice on how to earn more money or how they think the algorithm works. In India, on the other hand, couriers learn from video tutorials uploaded to You Tube by their peers (Authors 2024). Still other workers search for information on forums and blogs created by fellow couriers. The use of these tools (YouTube/Douyin, forums, blog posts) is quite common across all sectors of gig working, such as among Uber drivers (Chan 2019).

In every city there are dozens of private online groups which gather couriers working for a specific platform in that city. Besides these city groups, there are larger, national groups, founded by various associations of couriers, emerging or traditional trade unions, both right-wing and left-wing, which try to organize the discontent of couriers by channelling it towards more traditional forms of intermediation and protest. Each courier participates in dozens of these groups, both local and national, and over time also creates smaller groups of 5-10 people at most, in which they invite only colleagues with whom they have developed a relationship of friendship and solidarity.

In the next section we explain how food delivery couriers are able to generate a set of missing affordances to the ones designed by the food delivery platforms through leveraging the affordances of instant messaging apps like WhatsApp, Messenger, Telegram, WeChat and social media like Facebook.

We call the set of affordances that emerged from the coding of our data *cooperative affordances*. Following Costa (2018) and her concept of *affordances-in-practice*, we found that the *practice* of online private chat groups created by couriers affords: 1) the emergence of communities of practice; 2) resistance and contempt 3) mutualism and solidarity.

In the following sections, we provide a detailed account of this set of affordances.

1) Affording communities of practice

Private workers' chat groups are a kind of informal "school" of food delivery, where the courier learns how to do their job. Other studies in different sectors of the gig economy (short rent platforms like Airbnb) similarly showed the usefulness of Facebook and WhatsApp groups in professionalizing workers (Holikatti et al. 2019). As highlighted by James Woodcock, "the refusal of platforms to provide effective training or support platform means that workers must resolve many issues themselves. In response, workers seek each other out to share information and discuss the work" (2021: 72).

While food delivery companies need a reserve army of non-skilled, easily replaceable workers, the information that couriers exchange in chat groups supports their transformation into "professionals" or at least skilled workers, able to resist longer in the market (because they know the tricks of the trade). Within these private chat groups, they can learn and exchange work experience, share instant traffic information, and any other information that help them survive in this precarious work environment.

In China, for example, newcomers learn from workers' chats how to apply for health certificates⁴ or how to create a fake certificate and save money. During the Covid-19 pandemic, delivery workers were required to do a Covid-19 test and show their health code to the platforms regularly before starting to work. We observed that Chinese couriers in Beijing used to share information in their WeChat groups about how to prevent their health code from turning red (a red code does not allow access to certain areas).

Many conversations revolve around working tools and tips on how to make them more efficient. There is a lot of information on equipment for sale (delivery boxes, motorbikes, bikes, e-bikes, helmets...), advice on how to repair a moped, or how to save money on petrol. Other

very valuable information is about the areas of cities where people work best, or real-time traffic news.

Another very valuable piece of information is about the delivery fee. These fees vary and depend on black-boxed parameters: nobody knows the fee received for a similar order by other couriers. This information is only available if someone circulates it via the private online chats created by the couriers. In fact, couriers share screenshots of delivery fees to compare how much orders are paid from one city to another or if there are any differences between platforms. Through this continuous comparison, couriers learn which delivery fees are above and below the average. This form of collective intelligence allows them to create benchmarks for themselves and set thresholds below which they will not accept orders. The discussion of delivery fees is central to chats in all countries and this type of discussion is not limited to food delivery workers but seems to be a constant in all discussions that occur among gig workers (Soriano and Cabañes 2020 found similar discussions).

Yet, the most interesting conversations are those around the workings of order dispatch and personal ranking algorithms. On 11 October 2020, a courier from Milan asked in a private chat: “Million-dollar question: has anyone ever been able to figure out exactly why the Deliveroo efficiency value sometimes drops even when you always check in on time, stay within the area and never reassign an order? I'm going crazy trying to figure out what the criteria is behind it!” This conversation then triggered a collective unpacking session of the Deliveroo algorithm, in which everyone explained their theory of how Frank works. These theories, even when they are far from the truth, play a central role in the everyday life of the couriers, because once spread, they influence their behaviour and subsequent decisions.

These conversations shape the couriers’ “algorithmic imaginary” (Bucher 2017), i.e., the set of collective beliefs about how the platforms’ algorithms work. These beliefs are based on the personal experience of thousands of couriers. Learning the operating principles of food delivery

app algorithms, or even just imagining how they work, is a constantly evolving process, shaped by conflicting “folk theories” (De Vito et al. 2018). By discussing it together, couriers increase their “algorithmic awareness” (Gran et al., 2021), improving the digital skills required by their job. This algorithmic awareness, however, is far from homogeneous; in any case, intuition always plays an important part. In Mexico none of our interviewees were familiar with the notion of ‘algorithm’. In India we also discovered that the term ‘algorithm’ was alien to them; nevertheless, all these couriers are still able to cheat algorithms to some extent by finding loopholes in the platform's services. Factors such as education, age, city and country of residence greatly influence the level of algorithmic awareness of the couriers interviewed.

In summary, we could argue that these groups enable the emergence of communities of practice (Wenger 1998). A community of practice (CoP) is an informal learning organization linked by a common practice. As highlighted by Watkins, the CoP literature “emphasizes that learning is a social phenomenon situated in specific socio-technical contexts” (2022: 1573). This practice covers a very wide range, from frequent discussions in the cafeteria to the collective solution of difficult problems (Bronfman 2011). As demonstrated by the ethnographic work of Orr (1990), by working together, and, above all, by discussing their problems together, the Xerox repairmen shared and circulated the knowledge needed to repair the photocopiers. They thus created what is called a “community of practice” (Brown and Duguid 1991). The CoP framing has been applied to many different jobs of the media industries, like journalists (Meltzer and Martik, 2017; Schmitz Weiss and Domingo, 2010), creative workers (Comunian, 2017), and digital media industries and start up cultures (Neff 2005). Similarly, other scholars, such as Watkins (2022), have proposed to frame online discussion forums of gig workers as spaces that “provide an opportunity to examine gig workers as emergent communities of practice” (2022: 1567). Watkins focused on publicly accessible posts in online forums of the ride-hailing workers community, while we shed light on private online chat groups.

Yet, the pedagogical potential of these online groups is not only limited to gig working domains: other scholars, like author (2020) and authors (2022), emphasized the educational dimension of online communication environments in the case of social movement activists.

2) *Affording resistance and contempt*

These online environments also work as incubators of future resilience and resistance practices, as noted also by Woodcock (2021). According to him, these online networks can be understood as “the building blocks from which more formal organizations can be developed” (2021: 72). Within these private groups, food delivery workers not only learn how to work better, but they also learn how to better resist the power of platforms. These private groups enable the organization and coordination of collective actions and protests.

In Milan, on November 2, 2020, the approval of a new labor contract that would have lowered the earnings of individual deliveries drove hundreds of angry couriers into the streets, blocking city traffic, refusing to deliver food, and preventing other couriers from accomplishing the orders they had accepted. Couriers who decided not to join the protest were stopped by other couriers, had their smartphones broken, were beaten and their food destroyed.

These mass protests might at first appear to be desperate and unorganized actions, the result of sudden outbursts of anger, but they are meticulously organized through the creation of *ad hoc* private online chat groups. In fact, in the days leading up to the enforcement of the new labor contract, we observed the birth of several new WhatsApp groups, in which some more politicized couriers started spreading news about the timing and manner of the protest and orchestrating its organization. Without these groups, our interviewees admitted, these protests would not have occurred. The role of instant messaging apps in orchestrating collective action and social movements have been recognised by many scholars (Ling and Lai 2016; author 2018; Barbosa and Milan 2019; Pang and Woo 2020) and it has proved to be central in this

field as well. Yet, these apps are not the only tools capable of facilitating collective action. The news of a future protest travels from mouth to mouth when couriers meet each other on street corners or while they are waiting outside a restaurant. Interpersonal networks then are equally important for the organization of collective actions.

Another example is provided by the Indian case. On 9 August 2020, the Indian online food delivery platform Swiggy issued an internal communiqué that announced a pay cut for its delivery couriers across at least four cities—Delhi, Chennai, Hyderabad and Kolkata (Kauntia 2020). Faced with yet another cutback, a small group of couriers created a WhatsApp group. Each of them invited other couriers to join the group and together they organized a strike. On 19 and 20 August 2020 more than five hundred delivery workers assembled outside the Swiggy office in Malviya Nagar, in South Delhi, to protest the pay cut. After this first collective action, the group set up the All-India Gig Workers' Union (AIGWU). On September 15, 2020, Swiggy workers organized through AIGWU went on strike in several Indian cities including Hyderabad, Chennai, and Delhi to call for greater pay. They rallied outside of restaurants and prevented third-party companies from picking up orders⁵.

These collective actions serve to interrupt, even temporarily, the cycle of accumulation of platform capital. Like the workers of the embryonic stage of the industrial revolution described by Mueller (2021), food delivery workers are highly fragmented, and this fragmentation slows the establishment of forms of collective consciousness. Della Porta et al. (2022) showed how the work of food delivery couriers exhibits at least 5 types of work fragmentation: legal (they are self-employed); technological (they are individually governed by an algorithm); organizational (piece-rate work); spatial (they are dispersed in urban space); social (high ethnic heterogeneity).

Despite this fragmented work environment, workers continue to organize collective action (Bessa et al. 2022) and “mobilize against the odds”, as della Porta et al. (2022) rightly point

out. What della Porta et al. (2022) do not note, however, is that this mobilization is fuelled by online communication networks such as Facebook and WhatsApp groups, which form the backbone of their collective action.

3) Affording mutualism and solidarity

Within these groups each courier builds new bonds and expands their social capital. When a person starts working as a courier for the first time, they often feel very lonely. Adriano, a courier from Messina, Sicily, describes his first few days of work as follows: “This job isolates you a lot, because it’s you, the bike and the backpack. Then little by little you start to meet some people and you start to make some friends”. While waiting in front of restaurants, couriers start exchanging words, asking each other their names and what areas they usually ride in, and then exchange phone numbers. Then, someone invites them to join some private chat groups and from there they start interacting with other couriers they have never seen on the street. The interaction between the street and the online environment is constant: chats are embedded in street life, just as street life is embedded in chats. Private chat groups not only afford collective learning and resistance, but also foster mutual aid and solidarity networks, where couriers form spontaneous associations and smaller mutual assistance networks. These online environments provide what Tassinari and Maccarone (2020) called “day to day mutual support”. From these online encounters, relationships emerge that continue offline producing smaller online groups, which in turn provide stronger and more lasting solidarity ties.

An example of these bonds of solidarity is what happened one evening in December 2020 in Naples, Italy. A courier wrote on a private WhatsApp chat counting about 200 members that a colleague had been beaten up and his moped stolen. Within two hours, the members of the group launched an online crowdfunding and raised almost 2,000 Euros to allow the robbed courier to buy back his moped. Another winter evening, again in Naples, a courier wrote that

his moped had stopped and could not start. Two other couriers responded immediately and interrupted their work to pick him up and take him home. Antonio, a courier from Naples who had joined the left-wing Italian national union CGIL, told us that “in Naples, no one is left behind” and worked to establish a *'casa del courier'* (couriers' Home), a communal public space where couriers could meet, take a shower, rest, and chat. Public places where delivery workers gather are springing up in several major cities around the world, especially in the Global South. Qadri and Raval (2021) have documented the creation of several mutual aid stations in Jakarta, Indonesia: these stations are community basecamps, where Indonesian couriers exchange information, repair their bikes and mopeds and build bonds of solidarity.

In China and India, we found similar patterns: if a courier's electric bike suddenly runs out of power during a food delivery shift, they will send a help message in the WeChat group they belong to; if a nearby courier sees this help message, they will rush to find the courier in need to lend the spare battery.

In Mexico, a group of ten drivers has built a series of mutual support tools. The group operates with two group chats on WhatsApp: one is aimed at exchanging internal information, notifications on street traffic, entertaining contents (memes, jokes, videos, gossip), while the second is strictly focused on the security and safety of the members of the group: everybody reports when they start or end work; as soon as they start they send the UTR (real-time location for its Spanish acronym [*Ubicación en Tiempo Real*]) to the group.

These private networks represent only one resource among many, but they contribute to the building of solidarity networks among couriers.

Elsewhere, some scholars called this emerging solidarity among food delivery couriers “algorithmic solidarity”, because it is a solidarity that is both mediated by algorithms and a solidarity that arises “around” algorithms (Yu et al. 2022). In their study of Filipino platform workers, Soriano and Cabañes (2020) highlighted how “entrepreneurial solidarity” emerges

through the Facebook groups created by the workers. They argue that this kind of solidarity not only empowers them with a sense of agency, but also tends to enhance their entrepreneurial spirit and “serve(s) to dampen possibilities to meaningfully challenge the structures of power underlying digital platform labor” (Soriano and Cabañes 2020: 9). We too observed the same kind of solidarity, which in no way challenges the economic model proposed by the platforms. However, in addition to this form of “entrepreneurial solidarity”, we also noticed a critical and oppositional type of solidarity, which is not aligned with the “moral economy” (Thompson 1971; authors 2024) of food delivery platforms. This solidarity among workers is geared not only toward improving their working conditions, but also toward changing these conditions through organizing protests and strikes, or creating alternative delivery platforms, owned by courier collectives. In the last few years hundreds of food delivery platform cooperatives have materialized around the world. The founders are couriers who used to work for food delivery companies and left them to create a more sustainable job together with other former couriers. In Spain, there are Botxo couriers (Bilbao), Zampate Zaragoza (Zaragoza), Rodant (Valencia), Eraman (Vitoria), La Pajara ciclomensajería (Madrid) and Mensakas (Barcelona), while in Italy there is Robin Food (Florence). Most of them are members of Coop Cycle, a co-operative that provides its members with a technological platform that they could not otherwise afford on their own⁶.

Thus, we could say that “algorithmic solidarity” (Yu et al. 2022) afforded by online communication environments can take two forms: “entrepreneurial” and “oppositional”, which can lead to greater collective awareness of the exploitative conditions of gig working and to more structural forms of resistance and collective action.

Cooperative affordances

Throughout this article, we have pointed out that food delivery apps are designed to prevent workers from talking to, learning from and supporting each other. The technical design of these apps intentionally does not afford - and even discourages - any collaborative action between workers, because they are structurally conceived as self-entrepreneurs in perpetual competition among each other. Yet, through the creation of informal online groups, workers challenge the values inscribed in the apps they use to work. The establishment of these groups allows them to supplement, “in practice”, the missing affordances of the platforms for which they work. Workers are unable to hack the code of apps (so far, at least) to subvert their design and introduce new affordances, but they can supplement missing affordances through the cooperative use of affordances provided by instant messaging apps. The integration of the online groups into the daily routines of food delivery workers represents a form of subversion, *from below*, of the values encoded by companies in their technology. Following Santos et al. (2021), we could call this set of affordances “subversive affordances”, or “oppositional” affordances (Miloni and Papa 2022). However, while in the case analysed by Santos et al. (2021) the designers of Telegram have inserted in the app - by default - a “subversive” affordance⁷, in our case the couriers enact the affordances of the instant messaging apps in “subversive” ways, with the aim of expanding the set of actions made possible by the affordances provided by food delivery apps by default. Unbeknownst to the platforms, workers have thus developed new affordances that complement those of food delivery apps. We propose to call them ‘*cooperative affordances*’ that enable collective learning, collective action and the creation of bonds of solidarity.

Conclusion: cooperative affordances between Global North and South

Food delivery apps, like all technological artifacts, have politics (Winner 1980). What they afford or not depends on the political ideology of their creators. Yet, we showed that platform

workers are able to question the hegemonic enactments encouraged by the affordances of the apps. We illustrated how many of them developed practices of resistance and subversion to the set of actions afforded by the food delivery apps. Gig workers restored forms of mutualism not afforded by the apps through the creation of online private chat groups. Following Costa (2018) and her concept of *affordances-in-practice*, we showed how the *practice* of online private chat groups created by couriers affords: 1) the emergence of communities of practice; 2) resistance and contempt 3) mutualism and solidarity.

We called this set of affordances ‘*cooperative* affordances’, meaning all those actions afforded by instant messaging apps that enable cooperation and mutual support between platform workers and challenge the individualized and competitive logic of platform work. We argue, then, that the workers, through their communication practices, emphasized the cooperative affordances present (but not evident) in instant messaging apps and used them to integrate affordances intentionally omitted in food delivery apps. The cross-cultural design of our research allowed us to capture both the similarities and differences between how *cooperative* affordances are experienced in the Global North and the South. Patterns common to all research contexts emerged from our fieldwork: everywhere we observed the emergence of communities of practice, the organization of collective action, and the formation of bonds of solidarity. Yet, the practices that brought out the cooperative affordances of online chat groups are not the same in every cultural context we analysed. As Johnston rightly noted in the case of Venezuelan platform workers, “workers experience planetary labour markets differently depending on their location” (2022: 169). Indeed, the communities of practice that we observed vary from country to country and even from city to city within the same country. Each of the couriers we interviewed holds various cultural and social capitals and belongs to different social classes. We noticed a large digital divide between communities of practice in Global North and Global South cities. But this gap also exists between the big northern cities of countries like Spain and

Italy and the southern cities of these same countries. Naples, for example, more closely resembles a big capital of the Global South, rather than one of the Global North. In India, we found a wide digital divide between couriers from big cities and those working in more peripheral towns. Therefore, in line with Author (2019), we adopt a plural and flexible conception of the Global South that goes beyond a mere geographical understanding and casts it instead as a proxy to indicate a plurality of lived experiences and realities where oppression and inequalities hit harder, and people's resistance is more difficult, intense and urgent.

Even in the forms of resistance that have emerged within these communities of practice, we have noticed several differences. In China, for example, organizing a protest in public is much more dangerous than in Italy or Spain. In the Chinese context then, resistance practices have taken more "invisible" and everyday forms (Scott 1985). The formation of bonds of solidarity also unfolds in many ways in different cultural and social contexts: in countries and cities where poverty levels are higher and where food delivery workers belong to very poor social classes, solidarity emerges more easily, and more lasting bonds are built among workers. In China, migrant workers arriving in big cities to start serving as delivery couriers receive the support of more experienced workers and are even temporarily housed in the homes of members of couriers' private online groups. In Mexico, we have seen that workers protect each other, always sharing their location to receive immediate help in case of danger. These acts of mutualism and solidarity are more common in cities of the Global South than in those of the Global North.

Finally, this article contributed to three different debates: on communities of practice, on affordance theory in media and communication studies and on digital ethnography methodology. At the same time, this study has significant limitations. The main one is due to the limited choice of countries to be included in the fieldwork. Larger-scale comparative

research approaches, such as the FairWork project⁸, could critically engage with our findings and refine, revise and reconsider our results.

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¹ Just Eat is an online food delivery brand of the Dutch company Just Eat Takeaway.com. It was founded in 2001 in Kolding, Denmark, and was based in London, UK, from 2006 until its merger with Takeaway.com in 2020.

² Other examples include China's Ele.me that was founded in 2008, as was Zomato in India, while Meituan was founded in 2010, Deliveroo and DoorDash in 2013, Uber Eats and Swiggy in 2014, and Glovo in 2015.

³ **Deliveroo is a British online food delivery company founded in 2013 in London, UK. It operates in the United Kingdom, France, Belgium, Ireland, Italy, Singapore, Hong Kong, the United Arab Emirates and Kuwait.**

⁴ Chinese couriers must obtain a compulsory health certificate to be allowed to work.

⁵ Collective action in Tech. See: <https://data.collectiveaction.tech/?query=swiggy>

⁶ The software developed by Coop Cycle is also released as a “digital common” and protected by an ad hoc licence, called Coopyleft, which allows access to the code only to non-profit co-operative entities. At the end of 2021 Coop Cycle counted 70 members around the world, mostly concentrated in Europe. See <https://coopcycle.org/en/> (accessed October 4, 2022)

⁷ **According to Santos et al. (2021) Telegram designers inserted a functionality that allows users to seamlessly circumvent the blockage of Telegram imposed by the Russian government.**

⁸ <https://fair.work/en/fw/homepage/>