

Kuttler, Tobias

Book Part — Accepted Manuscript (Postprint)

Socio-spatial embedding of platform mobilities. A study on taxi driving.

Suggested Citation: Kuttler, Tobias (2022) : Socio-spatial embedding of platform mobilities. A study on taxi driving., In: Patel, Sujata Parthasarathy, D. Jose, George (Ed.): Mumbai / Bombay: Majoritarian Neoliberalism, Informality, Resistance, and Wellbeing, ISBN 9781003293651, Taylor & Francis, London, pp. 135-153,
<https://doi.org/10.4324/9781003293651-10> ,
<https://www.taylorfrancis.com/chapters/edit/10.4324/9781003293651-10/socio-spatial-embedding-platform-mobilities-tobias-kuttler?context=ubx&refId=0c396175-4484-42d0-b6ab-754af8dda456>

This Version is available at:

<https://hdl.handle.net/10419/343205>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

This is an Accepted Manuscript of a book chapter published by Routledge/CRC Press in *Mumbai / Bombay. Majoritarian Neoliberalism, Informality, Resistance, and Wellbeing* (edited by Sujata Patel, D. Parthasarathy, George Jose), on 16 June 2022, available online:
<https://doi.org/10.4324/9781003293651-10> [ISBN 978-1-003-29365-1]

Socio-spatial embedding of platform mobilities.

A study on taxi driving.

Author: Tobias Kuttler

Affiliation: *mobil.LAB Doctoral Research Group, Chair of Urban Structure and Transport Planning, Department of Civil, Geo and Environmental Engineering, Technical University of Munich, Munich, Germany*

Word Count: 8.437 words (including footnotes, abstract and bibliography)

Version: Post-print, 29.08.21

©2021. This is an Accepted Manuscript of the book chapter *Socio-spatial embedding of platform mobilities* published by Routledge/CRC Press in *Mumbai / Bombay. Majoritarian Neoliberalism, Informality, Resistance, and Wellbeing* on 16 June 2022. It is deposited under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/bync-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.



Abstract

Platform-mediated taxi services – despite their global, footloose appeal – are embedded in the socio-spatial fabric of cities: Operations depend on existing built infrastructure and are organised around local social circuits and relationships of trust that have evolved over years and decades. At the same time, platform-mediated services seek to evade local regulations and laws. Tracing the disruptions and continuities in Mumbai's taxi sector, the platforms' trajectory of (dis)embedding in urban socio-space is analysed. Thereby, it is observed how Mumbai's established taxi communities respond differently to the emergence of platform-based services and how privileged actors newly enter Mumbai's taxi sector via platforms. With the introduction of platform fleets, operations increasingly benefit entrepreneurs who invest in large vehicle fleets, while drivers are subject to sophisticated measures of surveillance that limit their agency and opportunities to make reasonable gains. It is concluded that mobility platforms in Mumbai build on and reproduce existing social inequalities prevalent in taxi driving. The insights into Mumbai's taxi industry shed light on the continuities and new tendencies of contemporary neoliberalism in Mumbai and the transformation of the dispersed urban service sector.

Keywords: Platform urbanism, embeddedness, neoliberalism, digital mobilities, social inequalities

Introduction

Within only a few years, digital platforms have transformed lives of millions of mostly urban dwellers significantly. More and more transactions between producers and consumers of services are processed via digital platforms. Yet, studies on the effects of the platform economy have highlighted the insecurity and precarity of platform work (Huws, Spencer, and Joyce 2016; Scholz 2017). The impact on cities and labour in the Global South is tremendous and the consequences complex due to fast-paced urbanisation and the significance of self-employment and small-scale economies (Surie 2020).

With the rise of the platform economy, cities have entered another phase of neoliberal restructuring. This phase is, on the one hand, characterised by an increasing entrepreneurialism of the self. Work conditions in the platform economy are characterised by algorithmic monitoring and surveillance due to constantly being connected through digital technologies (Shapiro 2018; Wood et al. 2019a). On the other hand, capital accumulation is

increasingly grounded in capturing socially-produced value and transforming it into surplus value (Rossi 2019). This includes value extraction from socially-dispersed, local knowledge that urban actors gain in many years of experience in navigating urban life. Hence, although being a global phenomenon, the platform economy builds on localised resources and spurs specific regional processes of neoliberal restructuring.

In order to understand the power relationships of the platform economy and their impact on people's lives, it needs to be investigated how platforms interact and become embedded in cities. Scholarship under the umbrella of *platform urbanism* emphasises that despite presenting themselves as independent and unconnected to local circumstances, platform firms and their operations are deeply integrated into the fabric of cities. They exert their power by deploying a strategy of simultaneous embedding in the local spatial and labour setting and dis-embedding from the regulatory context (Graham 2020). The lens of (dis)embedding is useful to investigate shared patterns of neoliberal restructuring of cities globally, but also to identify specific pathways of cities in the Global South.

This article investigates the impact of the platform economy on Mumbai by focussing on digital mobility platforms.¹ Via digital platforms, companies match self-employed drivers and customers, set the price of the service and retract a share as commission. Few platform operations interact as closely with urban space, society and governance systems as mobility platforms do, producing all kinds of frictions at the interface of the digital and the urban (Stehlin, Hodson, and McMeekin 2020). Platforms such as Uber and Ola have emerged in India at the beginning of the last decade and have since then become integral parts of mobility landscapes in many Indian cities.²

Mumbai has been chosen for this investigation for three main reasons. First, observation of digital mobility platforms in Mumbai contributes to a much-needed expansion of research scope on the impact of the platform economy in the Global South. Secondly, Mumbai has been profoundly transformed by earlier phases of neoliberal urbanism, driven by real estate and large infrastructure development (Banerjee-Guha 2010a). It becomes apparent that the rise of the platform economy has a similar tremendous impact on Mumbai, but is far from sweeping off the established unorganised service sector. This contestation renders Mumbai as a significant laboratory for labour in the service sector under neoliberal conditions, presenting an array of potential future pathways that other cities in the world may experience. Thirdly, the case of Mumbai demonstrates in an exemplary way how digital platform operations are embedded in urban space, by depending on contemporary built infrastructures and building on

historically grown socio-spatial networks. Mumbai is a unique terrain in this regard, since it is one of the few cities in India that have a long history of taxi operations and an intermediate public transport (IPT) sector which in comparison to other cities is strictly regulated and well organised. Before the introduction of fleet taxis in 2006, the iconic *kaali peeli* (black-and-yellow taxi) was the dominant mode of IPT for many decades (along with the auto rickshaw in the suburbs). App-based taxis, since their inception, have been facing substantial opposition from taxi and auto rickshaw operators and unions. Nevertheless, the number of taxis attached to mobility platforms in Mumbai has seen a steep increase from roughly 10.000 in 2014 to 75.000 in 2019, compared to 45.000 *kaali peelis* (Korde 2019). Mobility platforms' evasion of local regulations received substantial media and scholarly attention (Sharma 2019); however, the way platforms integrate urban infrastructures and social networks – including those of the existing taxi sector – into their operations and appropriate them for their gains is little understood in the case of Mumbai.

Aim and approach of the contribution

This contribution explores the emergence of digital mobility platforms and transformation in Mumbai's taxi sector from the perspective of taxi drivers. The analysis is conducted in five steps: First, I refer to platform urbanism to highlight the platform economy's urban embeddedness. Secondly, I retrace the recent transformation of the taxi sector in Mumbai and emphasise continuities and disruptions between conventional and platform-mediated taxi driving. Thirdly, based on my fieldwork, I scrutinise how platform operations embed themselves into socio-spatial networks that sustain the taxi trade, and thereby build on existing inequalities, establish new power relations and spur a shift in the existing socialities of taxi driving. Afterwards, I investigate how platforms enforce worker discipline by enforcing sophisticated regimes of driver control and surveillance. Finally, I discuss continuities and new tendencies of neoliberalism in Mumbai.

Fieldwork for this study is part of an ongoing PhD project and was conducted between January 2019 and February 2020 and builds on observations, interactions, and in-depth interviews with drivers, vehicle owners, fleet managers, passengers, representatives of authorities and platform companies, and planning experts and urbanists. The study was predominantly conducted in the eastern suburbs of Mumbai, with additional fieldwork in the island city, the western suburbs, in Navi Mumbai and Kalyan and during numerous taxi rides across the city and region.

Urban embeddedness of the platform economy

Digital mobility platforms are primarily operating in urban areas. They challenge economic and political power structures, contest territorial and administrative integrities and resonate with existing socio-spatial inequalities (Rosenblat and Stark 2016). Demarcating another contentious phase of neoliberal capitalist expansion and marketisation of previously “undervalued” spheres, the term *platform urbanism* has become the designator to subsume such observations (Barns 2019).

Mobility platform firms seek flexibilisation of their business models because they need to rapidly launch and expand their services, accumulate data quickly and attract further investment (Langley and Leyshon 2017). At the same time, companies aim at reducing the risk of operating in certain markets; they rely on a benevolent political climate, but are often in a conflictual relationship with local governance systems. Hence, flexible operations allow quick adaptations of platform operations to changing local circumstances or to shut down these operations in case resistance becomes too fierce (Stehlin, Hodson, and McMeekin 2020). Therefore, platform firms invest little into built infrastructure.

With the need of flexible operations and quick expansion, dynamics of embedding and dis-embedding evolve. Besides relying on existing road infrastructure, platform firms draw on the people and social networks that own, drive and maintain vehicles. Such embedding in urban space and social networks has been a characteristic of platformisation (Hodson et al. 2020). At the same time, platforms circumvent existing rules and institutions that govern the economic sector and evade tax jurisdictions, revealing the normative dis-embeddedness of platform activities (Wood et al. 2019b; Katta et al. 2020).

Additionally, platform workers are also gradually dis-embedded from conditions that usually govern local labour, such as labour laws or social security systems. Due to missing personal ties between platform operators and workers, these relationships usually entail a low level of trust. Platform workers try to overcome these conditions by building and maintaining interpersonal relationships of trust between platform co-workers, thereby socially re-embedding themselves (Graham, Hjorth, and Lehdonvirta 2017; Wood et al. 2019b).

The “conjunctural geographies” of simultaneously embedding and dis-embedding in urban space and social networks allow platforms to concentrate and exert power (Graham 2020). Graham (2020, 453–54) argues, “Platform companies exist at spatial bottlenecks – they mediate spatial interactions, and thereby exert immense power over local economic geographies. [...] They can link themselves to the local to concentrating reward, and retreat to

their ephemeral digital dualisms when abdicating responsibility.” In this process, platforms build on existing power relations and reproduce them, but also create new hierarchies and inequalities. While some digital workers succeed in benefitting from the platform logic, e.g. by circumventing other intermediaries that retract a share of the monetary gain or by becoming subcontractors on the platforms themselves, others see themselves exploited and losing most bargaining power (Graham, Hjorth, and Lehdonvirta 2017; Wood et al. 2019a). Such differentiated experiences and outcomes require a close examination of the position of platform workers and the local conditions platforms are embedded in; only then it is possible to identify who benefits and who loses out in the platform economy. As it will be shown, this is highly relevant for the case of Mumbai, since collaborators on mobility platforms hail from very different backgrounds and socio-economic strata. Additionally, operations of digital mobility platforms in Mumbai are governed by power relations that are grounded in owner-driver relations that are well established in Mumbai’s taxi trade for a long time.

Analysing socio-spatial (dis)embeddedness furthermore reveals the distinctive pathway of neoliberalism in Mumbai under the impact of the platform economy, which is different from neoliberal processes in the western context. It has been argued that the expansion of urban entrepreneurialism and commodification of socially-created values in the context of platforms economies characterise late-neoliberalism fostering precarious self-employment, a phenomenon that is relatively recent to western cities (Rossi and Wang 2020; Rossi 2019). However, due to the decline of industries such as cotton mills, cities like Mumbai experienced a decrease of formal employment already decades ago, contributing to today’s existence of a large self-employed urban workforce (Bhowmik 2010; Banerjee-Guha 2010b). An investigation of the interactions between platform activities and the socially-embedded economies of taxi driving sheds light on contemporary neoliberalism in Mumbai.

Transformation of Mumbai’s taxi sector

The emergence of digital mobility platforms in Mumbai has been perceived as disruption to existing transportation regimes in the city, concealing that transformation in Mumbai’s taxi sector started much earlier. Advocates of the world-class city vision of Mumbai promoted modernisation of Mumbai’s taxi sector since the mid-2000s (Bedi 2016). These precursory processes created an overall benevolent atmosphere towards digital platforms among the powerful coalition of actors promoting modernisation.

Many continuities exist between *kaali peeli* and platform-attached cab driving. Not only have many *kaali peeli* drivers shifted to digital platforms. Business networks and driving

communities that were earlier involved in the taxi trade have also started to own and operate platform-attached vehicles. The social and spatial embeddedness of *kaali peeli* operations is hence replicated in the platform economy, for the benefit of the platform firms and powerful local actors. Social embeddedness of taxi operations earlier secured the autonomy and stability of taxi driving networks. In a similar way today social embeddedness provides platform firms a source for value extraction. To identify the distinct features of neoliberalism in the platform economy, an understanding of disruptions and continuities in the context of taxi operations is needed.

Taxi modernisation and its impact on driving communities

In post-colonial Bombay, taxi driving became the mainstay of particular communities, such as the Chhillia Muslims from Gujarat³, Sikhs from Punjab and Muslims from Pratapgarh in Uttar Pradesh. Social circuits of ancillary services evolved that support taxi driving in their daily operations, such as maintenance, car washing and spare part procurement (Bedi 2018). These circuits provided stability to taxi driving communities, and have long made them resilient against changes imposed by the state. Powerful taxi unions have further contributed to turn taxi driving into a relatively secure and reputable occupation in Bombay before the liberalisation era. This stability was particularly relevant for Muslim communities, whose marginalisation and exclusion from public life significantly limited their opportunities for decent work in Bombay (Bedi 2018; Hansen 2001).

Post-liberalisation, taxi-driving communities came under increasing pressure due to transport and planning authorities' endeavours to modernise Mumbai's taxi sector (Bedi 2020). Since the 1990s, taxi owners needed to comply with new vehicle standards regarding safety and pollution control. In 2008, the Maharashtra government implemented a ban on taxi vehicles older than 15 years, spurring significant protest among taxi drivers and unions (Bhote 2020). Emergence of radio taxi fleets in 2006 brought further significant changes to independent driver-owners and driving communities, with established taxi communities in Mumbai responding hesitantly to these fleets.⁴

Emergence of digital mobility platforms in Mumbai

By the time operations of digital mobility platforms started in 2013, the taxi trade in Mumbai had undergone significant prior changes. However, these changes had occurred within the narrow permit systems that the state provided for taxi operations, which equipped drivers holding permits with considerable bargaining power (Bedi 2016). In contrast, since digital

mobility platforms use a different permit system, platform firms could recruit new drivers and penetrate Mumbai's taxi market quickly (Sharma 2019).

Lucrative incentive schemes that initially promised high bonuses to drivers, attracted persons from all backgrounds and with different motivations to join these platforms in a short span of time. Aspirant drivers with a variety of occupational backgrounds joined alongside those who had been driving taxis or other commercial vehicles for decades. Furthermore, students and middle class employees started part-time cab driving for additional income. Rather than a portion of the trip fare, bonuses for completing a certain number of trips used to be the main attraction and source of income during the early phase of application-based mobility services in Mumbai. Unions as well as taxi and auto drivers who remained loyal to their black and yellow vehicles were taken aback and responded with strikes in 2015 and 2016.

The initial euphoria among platform drivers gradually abated when the platforms made changes to their remuneration schemes, algorithms and operations models. The bonuses were lowered in 2017, and until early 2020 – according to many drivers – the requirements for achieving bonuses became virtually impossible to meet.

These developments not only left drivers with reduced incomes, but evoked unsettledness among drivers regarding the functionality of the platform, which increasingly appeared to them as a black box. These developments culminated in a 10-day strike in 2018. This strike however was sustained by vehicle and fleet owners rather than by drivers. Since drivers were not unionised, and could not risk losing their jobs, even if it paid meagrely, many of them did not participate in the strike.

Regulatory dis-embedding of mobility platforms and state response

At the centre of controversies have been the platforms' utilization of the All India Tourist Permit for their taxi operations, a permit system that was established for regulating inter-city transport. Unlike taxi permits issued under the Motor Vehicles Act 1988, the number of issued Tourist Permits is not limited; also, permit requirements for tourist vehicles are less strict in comparison to metered taxis.⁵ In Mumbai, its effect was manifested in the rapid increase of platform-attached vehicles.

While the federal government has largely been benevolent towards digital mobility platforms (MoRTH 2016; NITI Aayog 2018), the government of Maharashtra drafted more stringent regulations for mobility platforms in 2015 and 2017, but did not impose them. In early 2020, the scope for surge pricing⁶ of platform-attached cabs was limited and the fare structure of

metred cabs revised (Press Trust of India 2021). However, the legal vacuum of platform operations largely persists to date.

From micro-entrepreneurship to fleet operations

Platform firms introduced their own fleet operations in 2017, deviating significantly from earlier promotion of the micro-entrepreneur who owns one's own vehicle. With the introduction of dedicated schemes and applications for vehicle and fleet owners, entrepreneurs with or without prior connection to the taxi trade have been entering the platform business. Small-scale investors purchasing vehicles are often either drivers who start with owning one or several vehicles, or small business networks, including family businesses that are involved in the taxi trade or other transport businesses across generations.

In addition to small-scale fleets, large fleets of platform-attached cabs have been developing in recent years that consist of hundred or more cars, driven by a pool of at least double the number of drivers for day and night shifts. Fleet owners and managers are usually not members of the driving community, but from the middle class or the economic elites of Mumbai with a background in business administration who seek to enhance their array of economic activities or as a profitable investment opportunity.

Fleet management is not conducted by the platform firms themselves. Instead, for fleet operations, a new external intermediary position between the platform firms on the one side and the vehicle owners and drivers on the other side – a so-called account holder – was introduced. These account holders are often owners of many cars or consolidate existing vehicles in their fleets. Such an “outsourcing” of fleet management can be interpreted as the companies' ambition to further flexibilise their operations and reduce the need for dealing with intricate and complex day-to-day tasks and responsibilities.

The fleet model enables the platform firms to earn more profit from existing vehicles: In contrast to cabs operated by individual owner-operators, fleet vehicles run around the clock. A “Minimum Business Guarantee” scheme introduced in 2019 ensures vehicle owners bonuses, provided their fleets complete a certain pre-agreed number of rides each week. These bonuses constitute the principal source of profit for the vehicle owners and fleet managers. Drivers instead receive a fixed, non-negotiable payment per ride. According to fleet managers and vehicle owners interviewed, the fleet manager of the largest fleet in Mumbai determines the payments, and other fleets follow. Remuneration, however, fluctuates when there is a temporary shortage or oversupply of drivers.

Rejecting platform attachment

Many long-time *kaali peeli* drivers and established taxi communities maintain a dismissive position towards the digital platforms. Most *kaali peeli* drivers interviewed in the eastern suburbs of Mumbai and Navi Mumbai⁷ were in their 50's, and many between 60 to 90 years, who had been driving *kaali peelis* for many years or even decades; they considered the working conditions on the platforms as too harsh and humiliating. I frequently met taxi drivers who had driven a platform-attached cab for a limited time and then decided to return to driving *kaali peelis*.

Kaali peeli drivers also questioned the long-term viability of the platform model. One taxi driver stated:

“We have seen many of these taxi firms come and go, but we are still here. From our experience, most of these guys [drivers on platforms] are never able to pay off their loans. Either their vehicles are sent to scrap or taken by banks. We are confident that our form of taxi driving is more sustainable.”

Hereditary taxi driving communities have responded differently to the platforms. Members from Mumbai's Punjabi Sikh community who have been highly engaged in owning and driving *kaali peelis* – particularly in the eastern suburbs where many of them settled after arriving in Mumbai – have predominantly abstained from entering platform-based operations. Many members of the Chillia community have left the taxi trade and have ventured in the restaurant business.

Although many Sikh drivers have left the taxi trade, in Chembur and Navi Mumbai a substantial number of them are still operating. These drivers showed great adherence to their *kaali peelis*. Drivers felt a particular bond to their taxi and the whole sector because it was through the *kaali peeli* that their socio-economic status was uplifted, and subsequently of their children. Having achieved an improved social status and being financially stable allowed these drivers to continue *kaali peeli* driving. For instance, some of the older Sikh drivers revealed during interviews that they considered taxi driving as a “time pass” activity and continue to drive to spend time with long-time friends and colleagues. The secretary of a taxi association reported that the association cancelled memberships of drivers who have shifted to the platforms and does not allow them to come back.

Social embedding of mobility platforms

Today's platform operations in Mumbai are intertwined with the history of taxi driving in the city and the socialities created over decades. The continuities between conventional and platform-mediated taxi driving are apparent in everyday lives and biographies of drivers.

Most taxi drivers – whether driving a *kaali peeli* or a platform-attached taxi – hail from other parts of India, and have made Mumbai their (temporary) home to earn a living. Although taxi drivers operate independently, taxi driving is a socially-networked occupation, which relies on relationships of trust and acquaintanceship, both in its digital and analogue forms. Close-knit hereditary taxi driving communities such as the Chillia drivers historically provided security and stability to its members. However, lives of a large part of *kaali peeli* drivers has been insecure and uncertain throughout the decades.

Since a majority of taxi drivers have migrated to the city, the first hurdle aspirant drivers often face is to gain access to the city's social networks and resources. Often it is a friend, family, or community member who serves as entry point by providing a temporary place to sleep, social connections, financial support and access to a vehicle. These initial steps of becoming a driver are remarkably similar for a person who started taxi driving in the 1970s or a platform-attached driver today.

Although platform companies have reduced entrance barriers, starting to drive on platforms still requires additional support from peers or family. Often drivers invest family savings to make a down payment on a car loan. Many aspirant drivers migrating to Mumbai start to drive on rented cars owing to the lack of financial means. Owner-renter relationships are usually based on trust and acquaintanceship, hence aspirant drivers need prior social ties in Mumbai to identify vehicle owners. In larger fleets, new drivers are recruited on recommendation of existing drivers. Hence, different to other cities where the majority of drivers are vehicle owners (Surie and Koduganti 2016), in Mumbai both drivers owning vehicles and drivers renting vehicles can be found, resembling the two driving models in Mumbai's metered taxi sector.

In the following paragraphs, different trajectories of social embeddedness are presented. First, it will be explored how existing networks centred around the taxi and transport trade have embraced digital mobility platforms and thereby extended their social networks. Secondly, it will be observed how platform fleet schemes introduced new hierarchies and inequalities in driving networks.

Communities embracing the platforms

Decisions to engage with digital platforms and to invest in platform-attached vehicles and fleets are often made along community lines. In contrast to Chilia and Sikh communities, Muslim migrant communities were found to be active on mobility platforms, both as drivers and vehicle owners. These communities of migrant drivers had arrived in Mumbai many years ago, have their families in Mumbai, gained substantial knowledge and experience in the taxi driving profession, and have been able to secure moderate financial stability. They often act as facilitators for new migrants aspiring to start driving. Hence, they are instrumental in expanding mobility platform operations in Mumbai, and thereby deepen the embedding of platform driving in community networks.

Rasim is one of many migrant taxi drivers with a decade-long experience in Mumbai's taxi sector. He originates from the district of Pratapghar in Uttar Pradesh, a region that has long been associated with taxi driving. He owns several platform-attached cars and also one *kaali peeli* from his time as a *kaali peeli* driver. His network of drivers and vehicle owners is one example of an established taxi community in Mumbai's eastern suburbs that has openly embraced the platform economy. He recalls that they have always been open and adaptive to new developments in the sector:

“When I moved to Bombay in 1988, I started to work in a garage and shifted to taxi driving in 1995. From then on, I basically participated in every new development in the sector. I started with a conventional *kaali peeli*, then changed to an AC vehicle, and later I drove a Cool Cab⁸. When Meru⁹ came in, I started driving Meru, then I drove for Ola and now for Uber.”

Also, communities from other regions in India have embraced the platform economy. In Cheetah Camp, a locality in the eastern Mumbai M Ward where driving vehicles is one of the most common forms of self-employment (Bhide 2015), driver networks engaging on platforms were particularly found among Muslims from the southern part of India. Here, drivers of *kaali peeli* and platform-attached cabs were often found to be descendants of squatter families that had faced eviction and displacement between the 1950s and 1970s from different parts of the city, before they finally settled in Cheetah Camp (Deshpande 1976). The successive generations have succeeded in improving their economic position by working as vehicle drivers, nevertheless remaining vulnerable to the circumstances of living in an informal settlement or the consequences of caste discrimination and economic downturns.

Such experienced drivers have started to drive and own additional platform-attached vehicles, mobilising others to leave their occupations and drive their vehicles on platforms instead.

However, similar to individual driver-owners working on platforms, since 2016 such small-scale vehicle owner and driver networks with a minimum of five or maximum ten drivers have come under increasing pressure due to shrinking incentives, difficulties to repay loans and consolidation of large fleets. Small-scale vehicle owners suspect that platform companies are luring owners of large fleets by adjusting the algorithms in favour of these fleets. This (unconfirmed) suspicion brings additional uncertainty to platform drivers, making the platform appearing as an opaque black box to them. Especially in small fleet networks, consisting of friends, family or community circles, members try to balance the conditions of competition with their claim to solidarity among the members. Saleel, who owns several cars and is a driver, shows particular conscientiousness in keeping his circle of drivers happy, all of them being his long-time friends. He describes how his responsibilities have become a burden for him:

“For 40 hours I have not been home, I slept in the car. I am the owner of five cars, I have to take care of maintenance for all of them, I have to park the cars somewhere, and I have all the risk of the business.”

Hierarchies and dynamics in large fleet networks

A closer look at large-scale fleet operations of mobility platforms in Mumbai reveals sophisticated entanglement of platform operations with urban space and their embedding in social networks and places. Platform firms integrate local economic actors into their fleet business model, thereby making their fleet operations more reliable, by virtue of which they dispose of responsibilities towards drivers and vehicle owners and yet retain flexibility and decision-making power entirely. Large-scale fleet operations on platforms build on and replicate existing inequalities, since they share their profits with a small number of local collaborators, while the drivers receive standardised but unstable compensation.

Consolidated fleets evolved by collaboration between members of established driving communities. Rasim – the driver and vehicle owner from Pratapghar – together with other vehicle owners from his network decided to consolidate their cars in a larger fleet because that promised higher earnings for them. Whenever they add new cars to the fleets, they employ new drivers from Pratapghar and support them in dealing with paperwork, accommodation

and other requirements. While there is clearly a hierarchy between “old” and “new” entrants, an atmosphere of trust and mutual support prevails.

Other fleets developed when investors started procuring large numbers of cars and attached them to platforms. They consider engagement in the taxi sector as a business investment and a trade like any other. Accordingly, drivers are not regarded as community members but as workers whose labour power counts. Vimal is a fleet manager and owner of several hundred cars hailing from a successful business family. He explained his preferences in driver recruitment:

“The composition of the supply is from different states, so say 20% from Uttar Pradesh, then some 20% from Bihar, and 20% from Jharkhand. Those people from the backward states prefer to drive 18 hours. Driving fewer hours does not make any sense for us, and also not for them economically because of the cost of living in Mumbai. Local people prefer to work less, they prefer to drive 5 or 6 hours, not more.”

Once the new Minimum Business Guarantee scheme became operational in 2019, fleet managers and vehicle owners were disappointed about receiving lower earnings than expected. Drivers could often not achieve the number of rides that was set as a target to qualify for the bonus – or fell short in meeting other criteria, such as a threshold ride acceptance rate and minimum ride cancellations – resulting in vehicle owners and account holders missing out on profits. This problem brought considerable unease to driving communities involved in the fleet schemes. Account holders in their position as intermediaries were required to be answerable to the platform company and pacify the vehicle owners, and at the same time reprimand those who did not meet the targets and pressurize others to meet the same.

Fleet networks were observed to be dealing differently with these challenges. In Rasim’s fleet, Kahlil, an acquaintance of the group from the same district, had taken over the role as fleet manager and holder of the account with the platform company. Different from the individual vehicle owners, he had not been involved in the taxi sector earlier but was trained in business administration and had worked for a well-known consulting firm. His experiences in the private sector equipped him better to communicate and negotiate with the platform companies. He took over tasks that the individual vehicle owners could not accomplish mainly due to language barriers (English being the standard language of communication with driver and owner “partners”) or lacking communication skills. In addition, he also managed bank accounts, correspondence and fleet performance data.

When drivers in his fleet could not meet the bonus targets, he did not want to take strict actions against those drivers. Kahlil considered himself being a part of the driving community and trusted his drivers. At the same time, he was uncertain about the exact provisions of the operating scheme the platform company had offered him. For instance, criteria regarding how to benefit from the scheme changed frequently, announced via E-Mail or SMS (in English), but were not mutually agreed on in a written contract. Kahlil also suspected the weekly performance statistics he received from the platform firm to be erroneous. Subsequently, several account holders allied and confronted the platform company with their concerns, but platform representatives did not respond to their requests (in Hindi) for clarification, except for standardised replies in English. In the case of Kahlil's fleet, the drivers' community identified their subordinated role vis-à-vis the platform firm and the opacity of platform operations as conflicting, and hence decided to turn against and confront the platform firms. Together with other fleet managers facing similar challenges, he considered legal action against the firm.

Fleet owner Vimal had also experienced discrepancies between the company's and their own performance data, but considered these inconsistencies to be a common feature of business procedures that can be easily resolved. In his fleet he ascertained that the rules of the platform firm are to be followed always. Accordingly, he was also strict with drivers who did not comply with the rules, for example for doing a "private job" off-platform:

"We have a warning system. Anyone who does it, we give a first warning. The second time, we will make him pay INR 500 (USD 7) fine. Then if he repeats, we will fire him. There is no point keeping those guys."

These examples depict how new operation models of platform firms create new dynamics within the networks when new hierarchies are introduced in the driving communities. This can result in further strengthening of trust relationships between the members as in the case of Kahlil's fleet, or consolidation of power structures as in the case of Vimal's. In both cases, platform fleet operations dovetail more closely with the city's established and emerging taxi communities, but also with business communities that previously were not involved in the transportation sector.

Platform practices of surveillance and control

With the introduction of fleets, platform firms deployed new mechanisms of control and surveillance that exceed the digital sphere. Instead, place-based, social-managerial and digital

measures are tightly interwoven in a “surveillance assemblage” (Newlands 2020). Increased levels of control are an attempt to discipline those drivers who engage in what the platform firms call “misconduct”: To conduct rides off the platform, or try to avoid rides that promise to be unprofitable by frequently cancelling booked rides after inquiring the destination of the ride via phone.¹⁰

Common mechanisms of algorithmic control are tracking of drivers’ acceptance, cancellation and ride completion rates, which together with passenger ratings have an impact on algorithms of passenger assignment and reward systems.

In fleet operations, several layers of social control complement algorithmic control and substitute managerial supervision by the platform firms. Vehicle owners can access performance data of their vehicles anytime and in full detail. Furthermore, they can track their geo-referenced location in real time, and can observe when a driver switches off the application. Vehicle owner Rasim explains to me: “I can see the driver status in the app. If a driver is offline for too long, I will call him and ask him for the reason.” Vehicle owners closely monitor the online status of drivers, in order to prevent them from taking up “private jobs” and switching between different platforms, which would lower their profit margins. Hence, instead of the platform firms exerting direct control over drivers, the network comprising account holders, vehicle owners and drivers ensure discipline within their fleet.

While the platform’s smartphone application enables such managerial supervision, the procedure of the driver shift change has an important control function as well. Another vehicle owner explains the standard procedure in his fleet that demonstrates how place-based and social measures of control are linked:

“In this street, all the drivers come to park their vehicles and give them to the next drivers. I am always here between 4pm and 9pm to witness the driver shift; all the vehicle owners do so. I come early here to check in with the drivers via phone. As early as 5pm the vehicles are coming, by 8.30pm they have left again.”

Place-based measures of surveillance and control can also expand relationships of trust. Fleet managers and vehicle owners integrate persons working at the site of the shift change, for example by temporarily storing car keys with security guards or tea shop owners. Due to these arrangements, vehicle owners do not always need to be present on site during shift change while operations remain secured and controlled.

Surveillance organised in such a manner challenges the assumption that direct human surveillance is absent from digital platform operations (Jabagi et al. 2019), or in situations when human intervention is involved, it is only exerted reactively or when requested (Rahwan 2018). Where direct managerial surveillance is practiced, for example in food delivery (Shapiro 2018), human intervention is perceived as additive measure to algorithmic surveillance. Commonly, platform firms seek to gradually eliminate active human control once algorithms are updated (Newlands 2020). In the highly diversified and sophisticated operations of mobility platforms in Mumbai, the opposite tendency can be observed: Digital measures become intertwined with social and place-based measures that together form a comprehensive and overarching regime of driver control.

The emergence of the fleet model represents a significant turn in the operations of mobility platforms. The elaborate surveillance and control mechanisms described above embed platform operations more deeply into social structures, and interlock them closely with urban spaces. Furthermore, by linking algorithmic control measures with human and place-based intervention, platform firms avoid blindness towards the particularities of a city, rendering platform operations more resilient. Such blindness can be the result of excessive reliance on automated and algorithmic control, a phenomenon that has been called “algocracy” by several authors (Danaher 2016; Evans and Kitchin 2018).

Conclusion

Digital mobility platforms have embedded themselves into social networks and urban spaces of Mumbai. Platform firms extract value by capitalising on relationships of trust and reliability within existing taxi driving communities, and by banking on the power relations of established business communities. They also take advantage of migrant workers from northern India aspiring for economic and social emancipation or those from eastern Maharashtra trying to evade the continuing agricultural crisis. Simultaneously, platform firms evade transportation laws and renounce responsibility for the rights and wellbeing of drivers (Sharma 2019; Mazumdar 2020). Such processes have been termed “exploitative” and “parasitic” (Sadowski 2020; Pollio 2021). The case in point of Mumbai confirms experiences from other cities, that in platform economy operations, social embedding and normative dis-embedding can go hand in hand (Wood et al. 2019b). The Covid-19 pandemic, however, has forced mobility platforms to deviate from its earlier commercial strategy (Katta et al. 2020). The large companies operating in India have started donation campaigns for drivers who lost

their incomes due to nationwide lockdown in 2020 and introduced micro-credit and health insurance schemes (Korreck 2020).

While simultaneous embedding and dis-embedding observed in Mumbai's taxi sector is a general characteristic of the platform economy, the intricate interweavements of platform operations with the city's socio-spatial infrastructure are very specific to Mumbai. Due to contestations with the established taxi sector, the evolution of digital mobility platforms in Mumbai is more comparable to cities such as Johannesburg, Barcelona and New York (with influential actors in the metered taxi sector) than other Indian cities such as Delhi or Bangalore. However, this demonstrates that platform urbanisms, like other "actually existing neoliberalisms", are always contextually embedded and produced within specific national, regional and local contexts (Brenner and Theodore 2002).

The study of digital mobility platforms in Mumbai reveals important insights into the contemporary transformation of the city and its economy under neoliberal urbanisation. First, the prime target of contemporary neoliberal economy is the service sector. Hitherto largely unassailable by the state and difficult to appropriate by capitalists, small-scale service sector operations are facing a transformation with the rise of the platform economy (Surie 2020; Unni 2018). With more and more urban services becoming integrated into the platform economy, formalisation of formerly informal capital has the effect that a large share of profits converge in the channels of platform and other upstream firms instead of being distributed among the many contributors of the small-scale and unorganised sector. Furthermore, as demonstrated above, attempting to make additional gains by operating outside the platform is regarded as misconduct and disciplined by the platforms. Loopholes in the system that enable drivers to adapt platform functions to their needs or temporarily create opportunities for additional gains – as in the recent case of the "Ola fraud" (Thaver 2020) – have spurred frequent recalibration of platform algorithms and increasingly sophisticated control regimes. Hence, one may conclude that in the neoliberal platform economy, Mumbai further loses its marginal and liminal urban spaces – those spaces that are utilised and needed by the urban poor and lower middle classes for their livelihoods.

The study of Mumbai's taxi sector has revealed a second important neoliberal characteristic. In the past decades, numerous instances have testified that in India large scale surplus is extracted from housing, land, healthcare, education and other sectors (Nijman 2008; Banerjee-Guha 2010b; Kamat 2011). Different from the earlier accumulation strategies, platform firms

increasingly appropriate immaterial economic value that is *socially* produced, a form of capitalist “‘common-seeking’, drawing on the cognitive-affective capital of the ‘metropolis’” (Rossi 2019, 1422). Also in the case of Mumbai, capitalist encroachment is not confined anymore to the material commons such as land and infrastructure, and also not to previously dominant mechanisms such as privatisation of public assets, as Parthasarathy (2015) has observed. Instead, such “analogue” strategies of commodification are complemented and superseded by more flexible, and for the corporations, seemingly less contentious and risky forms of digital commoning.

Thirdly, and this is in continuation of earlier capitalist urban strategies, neoliberalism in the age of the platform economy benefits those who are already in an advantaged socio-economic position, and expropriates those in vulnerable positions. Engagement with digital mobility platforms in Mumbai benefits established entrepreneurs who expand their business scope, or middle class actors who drive cabs as part time occupation. Also, as highlighted for the case of Sikh taxi drivers, driving communities that have been upwardly mobile and live in financially stable conditions are not attracted by the platforms. Recently arrived, poor migrants, however, are vulnerable to exploitation. With decreasing payments, they need to conduct ever longer driving shifts to make their stay in Mumbai profitable. Furthermore, they face increasing surveillance and have limited decision-making autonomy and bargaining power. These examples of different driving networks show that such exploitation of socially produced commons by digital means occurs in a “contested arena of unevenly empowered actors” (Rossi 2019, 1429). In the context of the ongoing Covid-19 crisis, but also changing regulations, it has to be seen whether these developments make the platforms more accountable to its workers or whether they further drive socio-economic polarization in Mumbai.

¹ Also called transportation network companies, cab aggregators or shared mobility platforms.

² In 2021, Ola is operating in more than 200 cities in India, while Uber was operating in 89 cities by the end of 2020, with plans to expand to 200 cities (Poovanna 2020).

³ Members of the Chhillia community have been active in the taxi trade of the city for more than 100 years. They drove horse-drawn *Victoria* taxis before the era of motorised taxis. For more details see Bedi 2018, 2020.

⁴ For a more detailed discussion of the impact of radio taxis see Bedi 2018.

⁵ Details of different permit systems are discussed in Sharma 2019.

⁶ Surge pricing denominates the practice of charging customers more for a ride during periods of high demand.

⁷ Since auto rickshaws are only permitted in the suburbs, taxi operations in the island city differ substantially from operations in the suburbs.

⁸ A Cool Cab is a grey and blue coloured taxi with air condition, introduced in Mumbai in the late 2000s.

⁹ Meru was one of the first companies that introduced radio taxis in India.

¹⁰ On the two largest platforms operating in Mumbai, the application does not reveal a passenger’s desired destination to the driver before the passenger boards the car and the driver has confirmed the start of the ride.

References

- Banerjee-Guha, Swapna, ed. 2010a. *Accumulation by Dispossession: Transformative Cities in the New Global Order*. Los Angeles: SAGE Publications India.
- Banerjee-Guha, Swapna. 2010b. "New Urbanism, Neoliberalism, and Urban Restructuring in Mumbai." In *India's New Economic Policy: A Critical Analysis*, edited by Waquar Ahmed, Amitabh Kundu, and Richard Peet, 76–96. New York: Routledge.
- Barns, Sarah. 2019. *Platform Urbanism: Negotiating Platform Ecosystems in Connected Cities*. Singapore: Palgrave Macmillan.
- Bedi, Tarini. 2016. "Mimicry, Friction and Trans-Urban Imaginaries: Mumbai Taxis/Singapore-Style." *Environment and Planning A: Economy and Space* 48 (6): 1012–29. DOI: org/10.1177/0308518X15594803.
- . 2018. "Urban Histories of Place and Labour: The Chillia Taximen of Bombay/Mumbai." *Modern Asian Studies* 52 (5): 1604–38. DOI: org/10.1017/S0026749X17000191.
- . 2020. "Thinking Through Urban Obsolescence: Tinkering, Repair and the Politics of Joona in Bombay/Mumbai's Taxi Trade." *International Journal of Urban and Regional Research*. DOI: org/10.1111/1468-2427.12948.
- Bhide, Amita. 2015. "Social Economic Conditions and Vulnerabilities: A Report of the Baseline Survey of M (East) Ward, Mumbai.".
- Bhote, Karl. 2020. "Meter down for the Last Time for Mumbai's Iconic Kaali Peeli Fiat Taxi." <https://thewire.in/culture/mumbai-taxi-fiat-padmini-bombay-kaali-peeli-taxi>. Last Accessed on February 26, 2021.
- Bhowmik, Sharit. 2010. "Urban Public Space and Urban Poor." In *Accumulation by Dispossession: Transformative Cities in the New Global Order*, edited by Swapna Banerjee-Guha, 182–97. Los Angeles: SAGE Publications India.
- Brenner, Neil, and Nik Theodore. 2002. "Cities and the Geographies of "Actually Existing Neoliberalism"." *Antipode* 34 (3): 349–79. DOI: org/10.1111/1467-8330.00246.
- Danaher, John. 2016. "The Threat of Algocracy: Reality, Resistance and Accommodation." *Philosophy & Technology* 29 (3): 245–68. DOI: org/10.1007/s13347-015-0211-1.
- Deshpande, S. G. 1976. "Resettling a Squatter Resettlement." *Economic and Political Weekly*, 519–22.
- Evans, Leighton, and Rob Kitchin. 2018. "A Smart Place to Work? Big Data Systems, Labour, Control and Modern Retail Stores." *New Technology, Work and Employment* 33 (1): 44–57. DOI: org/10.1111/ntwe.12107.
- Graham, Mark. 2020. "Regulate, Replicate, and Resist—the Conjunctural Geographies of Platform Urbanism." *Urban Geography* 41 (3): 453–57. DOI: org/10.1080/02723638.2020.1717028.
- Graham, Mark, Isis Hjorth, and Vili Lehdonvirta. 2017. "Digital Labour and Development: Impacts of Global Digital Labour Platforms and the Gig Economy on Worker Livelihoods." *Transfer: European review of labour and research* 23 (2): 135–62. DOI: org/10.1177/1024258916687250.
- Hansen, Thomas Blom. 2001. *Wages of Violence: Naming and Identity in Postcolonial Bombay*. Princeton, N.J., Oxford: Princeton University Press.

- Hodson, Michael, Julia Kasmire, Andrew McMeekin, John Stehlin, and Kevin Ward, eds. 2020. *Urban Platforms and the Future City: Transformations in Infrastructure, Governance, Knowledge and Everyday Life*. London: Routledge.
- Huws, Ursula, Neil Spencer, and Simon Joyce. 2016. "Crowd Work in Europe: Preliminary Results from a Survey in the UK, Sweden, Germany, Austria and the Netherlands." https://uhra.herts.ac.uk/bitstream/handle/2299/21934/crowd_work_in_europe_draft_report_latest_version.pdf?sequence=1&isAllowed=y. Last Accessed on August 26, 2021.
- Jabagi, Nura, Anne-Marie Croteau, Luc K. Audebrand, and Josianne Marsan. 2019. "Gig-Workers' Motivation: Thinking Beyond Carrots and Sticks." *Journal of Managerial Psychology* 34 (4): 192–213. DOI: [org/10.1108/JMP-06-2018-0255](https://doi.org/10.1108/JMP-06-2018-0255).
- Kamat, Sangeeta. 2011. "Neoliberalism, Urbanism and the Education Economy: Producing Hyderabad as a 'Global City'." *Discourse: Studies in the Cultural Politics of Education* 32 (2): 187–202.
- Katta, Srujana, Adam Badger, Mark Graham, Kelle Howson, Funda Ustek-Spilda, and Alessio Bertolini. 2020. "(Dis) Embeddedness and (De) Commodification: COVID-19, Uber, and the Unravelling Logics of the Gig Economy." *Dialogues in Human Geography* 10 (2): 203–7. DOI: [org/10.1177/2043820620934942](https://doi.org/10.1177/2043820620934942).
- Korde, Kailash. 2019. "Black-and-Yellow Taxis Far Behind in the Race Against App-Based Cabs in South Mumbai." <https://www.hindustantimes.com/mumbai-news/black-and-yellow-taxis-far-behind-in-the-race-against-app-based-cabs-in-south-mumbai/story-nM0afOIMQJ2ctU674WYhAO.html>. Last Accessed on February 17, 2021.
- Korreck, Sabrina. 2020. "COVID-19 and India's Gig Economy: The Case of Ride-Hailing Companies." <https://www.orfonline.org/wp-content/uploads/2020/07/ORF-Issue-Brief-377-Pandemic-Gig.pdf>. Last Accessed on March 31, 2021.
- Langley, Paul, and Andrew Leyshon. 2017. "Platform Capitalism: The Intermediation and Capitalization of Digital Economic Circulation." *Finance and Society* 3 (1): 11–31. DOI: [10.2218/FINSOC.V3I1.1936](https://doi.org/10.2218/FINSOC.V3I1.1936).
- Mazumdar, Anurag. 2020. "Between Algorithms and the Streets: The Everyday Politics of Ride-Hailing Taxis in India." *Urban Platforms and the Future City: Transformations in Infrastructure, Governance, Knowledge and Everyday Life*, 235–47.
- MoRTH. 2016. "Report of the Committee Constituted to Propose Taxi Policy Guideline to Promote Urban Mobility." https://www.morth.nic.in/sites/default/files/circulars_document/Report_of_the_Committee_of_Ministry_of_Road_Transport.pdf. Last Accessed on February 26, 2021.
- Newlands, Gemma. 2020. "Algorithmic Surveillance in the Gig Economy: The Organization of Work Through Lefebvrian Conceived Space." *Organization Studies* 42 (5): 719–737. DOI: [org/10.1177/0170840620937900](https://doi.org/10.1177/0170840620937900).
- Nijman, Jan. 2008. "Against the Odds: Slum Rehabilitation in Neoliberal Mumbai." *Cities* 25 (2): 73–85. DOI: [org/10.1016/j.cities.2008.01.003](https://doi.org/10.1016/j.cities.2008.01.003).
- NITI Aayog. 2018. "Moving Forward Together: Enabling Shared Mobility in India." https://niti.gov.in/writereaddata/files/document_publication/Shared-mobility.pdf. Last Accessed on February 26, 2021.
- Parthasarathy, Devanathan. 2015. "Aamchi Mumbai: Capital, Commons, and the City(Zen)." Draft Paper.

- Pollio, Andrea. 2021. "Uber, Airports, and Labour at the Infrastructural Interfaces of Platform Urbanism." *Geoforum* 118: 47–55.
- Poovanna, Sharan. 2020. "Uber India on Course to Expand Across 200 Cities: Prabhjeet Singh." <https://www.livemint.com/companies/news/uber-india-on-course-to-expand-across-200-cities-prabhjeet-singh-11606723318412.html>. Last Accessed on February 27, 2021.
- Press Trust of India. 2021. "Mumbai: New Fares for Auto-Rickshaws, Taxis Come into Force." <https://auto.economictimes.indiatimes.com/news/industry/mumbai-new-fares-for-auto-rickshaws-taxis-come-into-force/81270867>. Last Accessed on March 30, 2021.
- Rahwan, Iyad. 2018. "Society-in-the-Loop: Programming the Algorithmic Social Contract." *Ethics and Information Technology* 20 (1): 5–14. DOI: [org/10.1007/s10676-017-9430-8](https://doi.org/10.1007/s10676-017-9430-8).
- Rosenblat, Alex, and Luke Stark. 2016. "Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers." *International Journal of Communication* 10: 3758–84. DOI: [org/10.2139/ssrn.2686227](https://doi.org/10.2139/ssrn.2686227).
- Rossi, Ugo. 2019. "The Common-Seekers: Capturing and Reclaiming Value in the Platform Metropolis." *Environment and Planning C: Politics and Space* 37 (8): 1418–33. DOI: [org/10.1177/2399654419830975](https://doi.org/10.1177/2399654419830975).
- Rossi, Ugo, and June Wang. 2020. "Urban Entrepreneurialism 2.0 or the Becoming South of the Urban World." *Environment and Planning A: Economy and Space* 52 (3): 483–89. DOI: [org/10.1177/0308518X19899428](https://doi.org/10.1177/0308518X19899428).
- Sadowski, Jathan. 2020. "Who Owns the Future City? Phases of Technological Urbanism and Shifts in Sovereignty." *Urban Studies* 58 (8): 1732–1744. DOI: [org/10.1177/0042098020913427](https://doi.org/10.1177/0042098020913427).
- Scholz, Trebor. 2017. *Uberworked and Underpaid: How Workers Are Disrupting the Digital Economy*. Cambridge, UK: Polity Press.
- Shapiro, Aaron. 2018. "Between Autonomy and Control: Strategies of Arbitrage in the "On-Demand" Economy." *New Media & Society* 20 (8): 2954–71. DOI: [org/10.1177/1461444817738236](https://doi.org/10.1177/1461444817738236).
- Sharma, Chhavi. 2019. "Aggregators, Driver-Partners and the State." *Economic & Political Weekly* 54 (46): 55–61.
- Stehlin, John, Michael Hodson, and Andrew McMeekin. 2020. "Platform Mobilities and the Production of Urban Space: Toward a Typology of Platformization Trajectories." *Environment and Planning A: Economy and Space* 52 (7): 1250–68. DOI: [org/10.1177/0308518X19896801](https://doi.org/10.1177/0308518X19896801).
- Surie, Aditi. 2020. "On-Demand Platforms and Pricing: How Platforms Can Impact the Informal Urban Economy, Evidence from Bengaluru, India." *Work Organisation, Labour & Globalisation* 14 (1): 83–100. DOI: [org/10.13169/workorglaboglob.14.1.0083](https://doi.org/10.13169/workorglaboglob.14.1.0083).
- Surie, Aditi, and Jyothi Koduganti. 2016. "The Emerging Nature of Work in Platform Economy Companies in Bengaluru, India: The Case of Uber and Ola Cab Drivers." *E-Journal of International and Comparative Labour Studies* 5 (3).
- Thaver, Mohamed. 2020. "Explained: How Taxi Drivers in Mumbai Manipulated the Ola App to Dupe Customers." <https://indianexpress.com/article/explained/how-cab-drivers-in-mumbai-manipulated-the-ola-app-to-cheat-customers-7064946/>. Last Accessed on March 31, 2021.
- Unni, Jeemol. 2018. "Formalization of the Informal Economy: Perspectives of Capital and Labour." *The Indian Journal of Labour Economics* 61 (1): 87–103. DOI: [org/10.1007/s41027-018-0121-8](https://doi.org/10.1007/s41027-018-0121-8).

- Wood, Alex J., Mark Graham, Vili Lehdonvirta, and Isis Hjorth. 2019a. "Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy." *Work, Employment and Society* 33 (1): 56–75. DOI: [org/10.1177/0950017018785616](https://doi.org/10.1177/0950017018785616).
- Wood, Alex J., Mark Graham, Vili Lehdonvirta, and Isis Hjorth. 2019b. "Networked but Commodified: The (Dis) Embeddedness of Digital Labour in the Gig Economy." *Sociology* 53 (5): 931–50. DOI: [org/10.1177/0038038519828906](https://doi.org/10.1177/0038038519828906).