Uber in Bangladesh: The Tangled Web of Mobility and Justice

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Ridesharing services have been viewed as heralding the next generation of mobility and recognized for their potential to provide an alternate and more flexible model of work. These services have also been critiqued for their treatment of employees, low wages, and other concerns. In this paper, we present a qualitative investigation of the introduction of Uber in Dhaka, Bangladesh. Using interview data from drivers and riders, and content analysis of riders' Facebook posts, we highlight how Uber's introduction into Dhaka's existing transportation infrastructure influenced experiences and practices of mobility in the city. Drawing on Iris Marion Young's theory of justice, we demonstrate how the introduction of Uber in Dhaka reinforces existing modes of oppression and introduces new ones, even as it generates room for creative modes of resistance. Finally, we underline algorithms' opacity and veneer of objectivity as a potential source of oppression, call for deepening the postcolonial computing perspective, and make a case for stronger connections between technology interventions and policy.

CCS Concepts: • **Human-centered computing → HCI theory, concepts and models**;

Keywords: Sharing Economy; Uber; Bangladesh; Feminist Ethics; Justice; HCI4D

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1 INTRODUCTION

There has been a growing focus in recent research examining the phenomenon popularly labeled as the *sharing* (also dubbed as the *taking economy* [17]). Studies of peer-to-peer, collaborative systems within the field of computer-supported cooperative work (CSCW) have examined a wide range of questions exploring the design of these sociotechnical systems (*e.g.,* [48]), underlying motivations that drive these systems (*e.g.,* [8]), labor practices (*e.g.,* [2]), and a range of other facets. The field of CSCW has also turned a critical eye to this phenomenon with its scrutiny of popular sharing economy stalwarts such as Uber and Airbnb (*e.g.,* [22, 59]). In this context, a pressing topic of concern is the kinds of practices and social relations introduced by these services, partly through their algorithms and interfaces [52]. Moreover, the services and business practices

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they engender are designed to support transportation systems of the Global North [44], and rely on certain assumptions about available sociotechnical infrastructures. When these systems are deployed outside of the Global North—where many of the assumed legal, social, and political infrastructures are radically different and often more constraint—breakdowns occur.

In this paper, we seek a deeper understanding of such breakdowns through a study of Uber's ridesharing service in Dhaka, Bangladesh [73]. Launched in November 2016, Uber was banned *"officially"* and indefinitely by the government within days [72]. The reason for the ban was reportedly Uber's use of private vehicles, which went against Bangladeshi laws that only permit ridesharing via taxis or commercial vehicles [72, 74]. Despite the ban, ridesharing via Uber continued, and tensions between Uber and the Bangladeshi government persisted [4, 74]. We examine how Uber's introduction into Dhaka's transportation system was shaped and reshaped by practices and infrastructures of mobility across the city. We also look at how this introduction influenced experiences of mobility through implicit and explicit promises of circumventing an imperfect infrastructural, institutional, and sociocultural system by providing access to a safer, more convenient, and improved transportation medium.

Research and scholarship in fields as diverse as city planning, mobility studies, and geography, have identified the interrelatedness of mobility and mobility infrastructures with issues of equity and oppression (*e.g.,* [55]). Drawing on data collected from interviews with Uber drivers and riders, and Facebook groups of Uber users in Dhaka, we show how the introduction of a new mobility technology such as Uber reveals existing modes of oppression related to experiences of mobility, and introduces new ones, even as it creates room for forms of resistance.

Our analysis draws on feminist political philosopher Iris Marion Young's theory of justice [80]. Young critiques the dominant reduction of justice to issues relevant to material distribution of goods such as land, capital, or labor, arguing that (re)distribution diverts our attention from *relational* issues such as social, political, structural and institutional forms of individual and collective interactions, which are also key in practices of oppression and domination. In other words, the issue that is central to the question of justice is not simply *"what you have"* but *also "how you are treated"* [28]. Young argues that a theory of justice should also take into account the social and institutional conditions and processes for achieving non-domination and non-oppression [80]. As Forst reinforces in his commendation of Young's critique of the "distributive paradigm", *"Justice is not primarily about evaluating end-states or distributions of goods regardless of how they came about; justice is a relational virtue of the actions, structures, and institutions in which persons stand to each other as social and political subjects, be they structures of the production and distribution of material goods or of the exercise of political power"* [28].

The relational aspect of justice demands particular consideration in the case of discourses around the sharing economy. These discourses are—not unlike traditional theories of justice such as those put forward by Bentham [11], Mill [54], or Rawls [60]—dominated by a focus on (re)distribution of material goods or the *"excess capacity"* of goods and services (*e.g.,* [10, 34, 71]). This focus on redistribution, although critical in its own right, might bring us to overlook the impact of sharing economies along relational lines. By adopting a relational theory of justice and aligning with a view of *"values as hypotheses"* [42], we reorient and enrich the understanding of sharing economies. Doing so reveals a whole new set of issues related to the impact of sharing economies on groups' interactions and practices. Young's framework is suitable as a starting point here, given that it is broad and flexible enough to account for many facets of relational injustices related to sharing economies, but specific enough to help distinguish the different manifestations of associated injustices. Her framework is aligned with prior relational theories such as Amartya Sen's Capability Approach [65, 79], and has been widely embraced in feminist scholarship.

With the above rationale for our theoretical framework, we analyze our findings to build on the five faces of oppression introduced by Young—*"cultural imperialism"*, *"marginalization"*, *"powerlessness"*, *"exploitation"*, and *"violence"* [80]. We posit that each of these faces is potentially revealing of an aspect of the interconnectedness of mobility and justice. We further outline opportunities for inventive responses made possible by this technology to our research participants (and others). Finally, we highlight how the opacity and veneer of objectivity of algorithms surface in day-to-day experiences and practices of riders and drivers, call for furthering the lens of postcolonial computing, and make a case for stronger connections between technology design and policy-making.

2 RELATED WORK

2.1 The Sharing Economy: Motivations and Limitations

The sharing economy, also referred to as the peer-to-peer economy or the collaborative economy [14], may be viewed as a *"recirculation of goods, increased utilization of durable assets, exchange of services, and sharing of productive assets"* [64]. This exchange of goods and assets has recently garnered interest from social and technical perspectives in the CSCW community (*e.g.*, [18, 38, 59]), Human-Computer Interaction (HCI) community (*e.g.*, [9, 44, 47]), and other related domains (*e.g.*, [25, 56, 70]), signaling a growing interest in the area. Though the concept of a shared commons has been around for centuries, the notion of a digital sharing economy heavily mediated by technology is relatively recent [14, 23]. However, there is debate on the use of the term "sharing economy"; different people interpret it in different (and sometimes critical) ways [13, 56].

The sharing economy discourse raises several questions around how we might perceive platforms that allow sharing of resources. Although these have been recognized for the promise of offering employment opportunities, resource utilization, and overall economic benefits, they also introduce problematic consequences across the labor ecosystem. For example, Edelman et al. found evidence of racial discrimination in Airbnb use, noting that non-black hosts were able to charge more than black hosts for similar properties. The requirement of hosts to provide their photos was identified as the basis for this discrimination [24]. Concerns about underpayment and unfavorable working conditions have also been raised by TaskRabbit workers [69]. At the same time, these digital platforms are perceived to be *"better than governments at spotting stalkers, running background checks on sharing service providers, and responding quickly to conflicts among members"* [51]. Researchers have challenged both the premise of these technologies and their algorithmic foundations (*e.g.*, [27]), and pointed out limitations of specific mechanics and practices they entail, such as process of validation of reviews [50], worker concerns [39, 59], legal boundaries [69], in addition to challenging their design [2, 22, 49].

Much of this discourse around sharing economies, however, has examined uptake in the Global North, where resource distribution tends to vary quite starkly, in general, from that in the resource-constrained contexts of the Global South. Kasera et al. showed, for example, that ridesharing technology designed in the Global North does not align with the *"tempo"* and *"pace"* of a driver's day in their context [44]. Ahmed et al., by contrast, studied a local ridesharing platform, Ola, from the driver's perspective in Bengaluru, India. They found that in spite of the promise technology-mediated ridesharing services offered, most of the drivers' earnings or working times were not altered [2]. In this paper, we extend the geographic scope of these conversations to include the introduction and adoption of Uber in Bangladesh, where the ridesharing service continues to grow despite facing great resistance from existing establishments. Indeed, the lack of *"standard"* transportation services (such as air-conditioned buses) in Dhaka has been widely criticized in recent years [75]. This phenomenon is also held responsible for *"forcing"* the burgeoning upper-middle class and middle-class of Dhaka to rely on privately-owned modes of transportation, resulting in an

increase of private cars in the city [6]. A recent survey shows that 53 cars are added everyday to the roads of Dhaka, in contrast to only 10 buses/minibuses [1]. The proliferation of private vehicles on the road has created conditions for Uber to flourish. Against this backdrop, our research uncovers the forms of oppression introduced by Uber in Bangladesh, even as old ones are reinforced and reshaped [80]. In addition, we outline some of the inventive methods both riders and drivers took to, in order to respond to these injustices, pushing back against the logic of the system.

2.2 Mobility and Justice

Scholars from disciplines ranging across urban planning, sociology, and mobility studies have noted the relationship between mobility and justice. For example, Ohnmacht et al. define mobility as *"a physical movement of people and objects as well as movement of images and information,"* and argue that mobility and patterns of inequality are reciprocally related [55]. Mobility infrastructures, especially public transportation, are commonly deployed with the notion of improving access for particular groups [63]. As Cass et al. have noted, however, claims about such access routinely make assumptions regarding what is necessary for people to participate *"effectively"* in society, leaving out the *"hidden exclusions"* that might need deeper inspection for improving various dimensions of access [19]. Some of these exclusions might be enforced (if not taken into consideration when designing access) because of the cultural practices or values of certain societies. Indeed, as Hanson et al. have outlined, a major portion of the individual's experience of mobility is shaped by the social, cultural, and geographical context [36, 57]. For example, transportation laws in Saudi Arabia prohibited women from driving until recently [46], and women in Indonesia cannot participate in certain types of work such as street vending as they are not *"supposed"* to be out after dark [36, 66]. These phenomena are identified as types of *social exclusion* or *"a constraints-based process which causes individuals or groups not to participate in the normal activities of the society in which they are residents and has important spatial manifestations"* [57] built on forced immobility.

Our paper contributes to CSCW scholarship in two ways. First, we provide an empirical account of collaborative consumption, or sharing economies, unfolding in the Global South, a widely-occurring but acutely under-researched phenomenon. Second, using the introduction of Uber as a probe, we expand the discourse around social justice in CSCW, building on Young's theory to discuss facets of oppression such as marginalization, powerlessness, and cultural imperialism that are of increasing relevance in CSCW scholarship [29].

3 UBER IN BANGLADESH

Uber (in Bangladesh) listed three distinct roles through which individuals could serve as a part of its ecosystem [76]. These included *(1)* non-driving partners, *(2)* drivers under partners, and *(3)* driver cum partners. To be a non-driving partner, an individual (or service) would not drive but own vehicle(s) and manage one or more drivers. To be a driver under partner, an individual would drive a vehicle that was owned by a non-driving partner. Finally, to be a driver cum partner, an individual would drive the vehicle s/he owned. A list of requirements was also mentioned under each category. A significant limitation was that Uber drivers needed to have a special professional driving license (that came with a validity of five years), unlike the non-professional driving license (with a validity of ten).

Two kinds of non-driving partners featured in our study—private vehicle owners and "vendors" who operated *Rent-A-Car* services [3]. Uber initially recruited drivers through these services, which allow vehicle rentals (for a day or a few hours), necessarily with a chauffeur. The rental fee depends on the distance traveled and is fixed through bargaining before the travel is begun; a partial amount is deposited with the vendor. The vehicles that were part of such businesses were either owned by vendors or registered with them by their owners. This was a pre-existing business model that

Uber leveraged to its advantage when it came to Bangladesh. Another existing practice that Uber preserved was of making payments in cash [20, 61]. Credit card payments were allowed in mid-2017 but are yet to see wide uptake at the time of writing [78].

4 METHODOLOGY

We conducted our study in Dhaka, with approval from our institutional review board, from late-2016 to mid-2017. Our goal was to understand the adoption and challenges of Uber from the perspectives of Dhaka residents, even as its services were banned by the government. We interviewed 12 Uber drivers and 8 Uber riders for approximately 30 minutes each. This was after we had observed the drivers at work for at least an hour, to foster familiarity. Interviews were conducted until we had reached data saturation [33]. The initial set of participants was identified by word of mouth, while subsequent riders were recruited using snowball sampling [32]. This method was helpful in recruitment because adoption was still not prevalent. We also studied two Facebook groups of Uber users in Dhaka early-mid 2017.

4.1 One-on-One Interviews

We interviewed 12 drivers and 8 riders (Tables 1 and 2). We aimed for a gender-balanced sample, but to the best of our knowledge, there are no women Uber drivers in Dhaka. This was not surprising given conservative societal norms. Two of our driver participants drove their own cars, seven of them rented the cars they were driving, and three were employed by the owners of private cars. Their monthly incomes from Uber ranged from USD 400 to USD 800, based on the number of trips made and the ownership status of the cars they drove (as we will explain in our findings). The drivers who were employed by owners of privately-owned vehicles received a fixed monthly salary ranging between USD 125 to USD 175. The drivers who drove rented vehicles received a fixed monthly salary as well, ranging between USD 150 and USD 250, if their car was rented a minimum number of times per month.

The riders we interviewed all self-identified as members of the middle class. Their personal monthly incomes ranged from USD 530 to USD 1,200. None of these riders owned a personal vehicle, but two of them had a car that was used by their family members. Their typical modes of transportation ranged from cycle rickshaws to three-wheelers and buses, although women participants seldom used buses as their preferred transportation medium.

All interviews were conducted in Dhaka by the last author, who is a native Bengali speaker. Interviews took place in Bengali and were then recorded, transcribed, and translated to English. Questions asked were centered on users' experiences with Uber and the challenges and opportunities it afforded them.

4.2 Facebook Groups

All eight (rider) participants were active users of social media and used these channels to apprise themselves (and their networks) of promotional codes offered by Uber in an attempt to secure free/discounted rides. They led us to two Facebook Groups—*Uber Users of Dhaka* and *Uber Users of Bangladesh*—where riders shared their Uber experiences. These Facebook groups were formed approximately two months after the introduction of Uber. We drew data from both these groups to deepen our understanding of local Uber users. The number of accounts registered under these groups were approximately 85,000 and 125,000, respectively, at the time of culmination of our study.

In addition to serving as a platform for sharing experiences, these Facebook groups served as fora for generating and posting information and instructional materials (*e.g.,* how to register a personal car, what might result from bad ratings, or how to submit a complaint). In our initial review, we learned that only a handful of the members were active participants. We got in touch

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
Age (Years)	32	29	34	33	27	36	30	36	42	35	33	37

Table 1. Recruited Drivers

	R1	R2	R3	R4	R5	R6	R7	R8
Gender	Man	Man	Man	Man	Woman	Woman	Woman	Woman
Age (Years)	22	25	24	34	25	23	27	29
Profession	Student	Lecturer	Engineer	Govt. Officer	Analyst	Lecturer	Doctor	Student

Table 2. Recruited Riders

with these members over Facebook Messenger to check whether they were representatives of Uber and were told that they were not. We scanned every post made on these two groups and found 33 posts that led to a discussion, as we were particularly interested in understanding the collective sensemaking effort of users. We then manually scraped these posts and their comment threads. The number of comments per post ranged from 2 to 42 (average of 27). We used some of this data to inform the questions we posed to the drivers and riders—for triangulation purposes. Facebook entries were either in Bengali, English, or a combination of the two. They were translated by the last author.

4.3 Data Analysis

The data gathered from interviews and Facebook groups was consolidated and subjected to open coding and inductive analysis, as recommended by Merriam [53]. Based on the patterns that emerged, we noted that concerns around equity, fairness, and justice appeared both explicitly and implicitly in a majority of responses. In order to understand this theme better, we engaged in a review of theoretical frameworks on social justice, which brought us to Iris Marion Young's articulation of the *"five faces of oppression"* [80]. We found this theory particularly productive because of its phenomenological grounding: that is, much like our interviews, it is rooted in the lived experiences of people. Moreover, the faces of oppression identified by Young are broad and flexible in ways that could incorporate the many ways that people experienced and characterized the mobility infrastructure as unjust, while specific enough to distinguish the varied nature of these experiences. As we organized our findings using this framework, we found it to be comprehensive for our dataset (*i.e.*, we did not need to adjust the framework to account for our findings). The *"faces"* were useful in characterizing the oppressive dimensions of Uber and how it reinforced and generated patterns of injustice. They were also useful in explaining why Uber was adopted and used by enabling participants to challenge limiting and unjust aspects of the existing mobility system. Lastly, the relational nature of this theory is a stark departure from distributive theories of justice that might justify sharing economies' logic in general and Uber's in particular. In addition to providing an empirical account of the introduction of sharing economy platforms in the Global South—a phenomenon acutely understudied, we offer a different way of looking at such platforms—from the perspective of relational justice, and introduce Iris Marion Young's take on matters of social justice to the CSCW community that is increasingly turning its attention to such topics (*e.g.*, [29]).

5 THE OPPRESSIVE FACES OF UBER IN DHAKA

As noted in our introduction, the idea of social justice and adjacent themes such as fairness and equity have been present in the discourse around sharing economies in general (*e.g.,* [52, 58]), and Uber in particular (*e.g.,* [17]). These themes also surfaced in our data analysis of experiences of drivers and riders who expressed particular manifestations of (in)justices in connection with Uber. We draw on Young's theory of social justice, which challenges conventional distributive models of justice with one that accounts for relational issues [80]. As we note above, this model is particularly apt for our study because the discourse around sharing economies, not unlike that of justice, has been dominated by discussions of allocation and distribution of resources (*e.g.,* [10, 34, 71]). Justice, however, as Young explains in depth, is not just about what one has, but also *how one is treated* [80]. Built on this premise, Young defines oppression as *"structural phenomena that immobilize or diminish a group"* [80]. Understood in this manner, oppression explains many of the dissatisfactions voiced by Uber users in the United States and elsewhere, as shown by related works [9, 49, 59], as well as our own findings. We were open to extending Young's framework based on our research, but our analysis aligned well with the five faces of oppression put forward by Young, as described below under cultural imperialism, marginalization, powerlessness, exploitation, and violence [80]. Even as we describe our findings through the Young's lens, we highlight the acts of resistance our participants responded with, in ways that were both pragmatic and inventive.

5.1 Cultural Imperialism

Young defines cultural imperialism as the *"universalization of a dominant group's experience and culture, and its establishment as the norm"* [80]. The ideas and products offered and supported by an imperialistic culture are chiefly shaped by the dominant group's experience or interpretation of events and imposed on the non-dominant group.

5.1.1 From Promo Codes to Addiction. Calo and Rosenblat note that the sharing economy is more aptly described as the *"taking economy, poised to do a great deal of taking—extracting more and more value from participants while continuing to enjoy the veneer of a disruptive, socially-minded enterprise"* [17]. This logic of extraction was echoed in our participants' responses. For example, participants noted the use of promo codes and how these lure riders and therefore drivers. Drivers in our study went so far as to label them objects of *"addiction"*. They felt strongly that the more the riders used these promo codes, the more they would be dragged into the Uber ecosystem. This desire to deceptively draw new users into its fold, our participants stated, was aligned with age-old ways of foreign companies (in their perception). One driver explicated, offering the analogy of tea—widely attributed a remnant of British imperialism:

> *"Uber is getting you into addiction. You see, Bengalis didn't drink tea first. The foreign people taught us, got us into it. Now people can live without regular meals but they must drink tea. Now they are giving you discounts, this discount, that discount. When you would get used to it, then you would think if I have to pay 200 more, I will. But I will not get into a CNG[1], I will take Uber. They (Uber) are American. They have these ideas. Uber is a worldwide service." (D5)*

The promo codes—seen as American—served to align incentives so that both drivers and riders benefited. There was a belief that once they had successfully integrated Uber engagement into their routines, the habit would be difficult to break.

5.1.2 Maps and the English Language. The Uber app was not designed for use in Bangladesh, or by a Bengali people, such that Bangladeshi users had no option but to engage with the app in

[1] CNG stands for Compressed Natural Gas but the term is commonly used to refer to three-wheelers that run on CNG.

English, and by using its map interface. Our participants were not accustomed to such interfaces, although they are commonly used in Western, technology-rich contexts. The use of English and maps was seen as an imposition by some participants. They voiced their desire for a Bengali option, as seen below.

> *"This (new) driver tells me that most Uber drivers are illiterate, including him. He only knows how to use the app and can't actually read the screen or the maps properly. He gets by with his luck. If the system matches him with people that are nearby, he is lucky. If the people are not nearby, he is out of luck. He says he gets lucky three out of five times. I understand we cannot expect all drivers to be fluent in English but isn't this something Uber should be aware of, before letting these drivers loose into the city? Like maybe giving them a Bangla (Bengali) language option or ensuring they are not abusing the system and wasting people's time." (FB1)*

This finding about the lack of usability of maps for drivers has also appeared in prior work by Zade and O'Neill [81] and Ahmed et al. [2], who studied ridesharing practices in India. Although not offering local language options may be interpreted plainly in terms of poor user experience choices, it is worth noting that Bangladesh's colonial past plays a role in complicating responses to the imposition of English, as Karusala et al. recently studied in the context of smartphone use across India [43].

5.1.3 Rating Systems. The rating system introduced by Uber also did not make sense to users, and may be viewed as an additional example of the dominant group (*i.e.,* Uber developed in the US), bringing others under the measure of its dominant norms (*i.e.,* a rating system that has increasingly become familiar to the technology industry and western audiences but is by no means universally meaningful or effective). It seemed evident to riders and drivers that a five-star rating was best and almost all our driver participants asked their riders to give them a five-star rating after their rides. Beyond a five-star rating, though, the interpretation was less clear. Both riders and drivers were unclear about how to assign rating, leading to various confusions as reflected in D12's comment: *"I always give five stars to everyone but I do not really know what it means. If I do not have a five star does it mean that I am a bad driver?"* This rating did not seem to impact riders' decisions when they were traveling in a group, or for male riders in general. Women participants, however, preferred to travel with someone who had a "higher" rating. While some assessed drivers based on an arbitrary threshold, others would simply select a driver with a higher rating than a previously canceled driver. Although the lack of a clear understanding of the rating system seemed to echo findings from other countries [2, 31, 59], what stood out to us were the practices adopted by riders in order to make sense of their fuzzy understanding, potentially leaving drivers at a disadvantage.

5.1.4 In Search of Alternatives. We found that there were calls on Facebook for *"competition to keep Uber on a leash"* (FB2). Responding to the American origins of Uber, participants wanted local startups to learn from the successes and failures of Uber to develop a cheaper and better alternative for ridesharing.

> *"I request our businessmen and startup enthusiasts to bring some competition to this company. Uber has proved that this type of business can be run in Bangladesh. In most of the countries, there are local companies which offer cheaper alternatives to Uber. It is high time we did something as well." (R3)*

It is important to note that a local motorcycle-based ridesharing service, *Pathao*, was introduced in Dhaka a few months after Uber's launch [30, 68], creating competition for Uber by offering lower rates: *"If you want to move alone, bike service Pathao is the best option" (FB6).* Further, while the Uber Pool service has been introduced in many American contexts, where it allows significant

cost-cutting for riders, no such alternative was available in Dhaka at the time of our study. However, we found that riders were routinely self-organizing to carpool, traveling in groups to share costs.

In sum, we found that the introduction of Uber imposed various unfamiliar practices, such as reading maps, navigating English interfaces, and new rating systems. Not only did these require certain absent literacies of the users, they also compelled users to conform to technological behaviors that were unfamiliar to them. On the one hand, these may be read as poor usability decisions on Uber's end as they allowed Bangladeshis to use their app, but it is worth recognizing that these features also signaled imperialism to participants, evident from their references to *"tea"*, *"American"*, the perceived imposition of English, and a push for local alternatives.

5.2 Marginalization

Young defines the marginalized as *"people the system of labor cannot or will not use"* [80]. Marginalization expels a whole category of people from participation in social life. This exclusion causes material deprivation for the marginalized, which can somewhat be mitigated by the redistribution of wealth or resources, but not entirely. Some features of Uber that were discussed under cultural imperialism (such as the use of rating systems or maps) that users had difficulty using can also be a source of marginalization. For example, one can imagine that those without a smart phone who might lack the literacies needed to use or interpret the mapping system were entirely rejected by the system. Uber's practices also ended up marginalizing those who did not have access to its reduced fares through promotional codes, and those who could not become Uber drivers based on their license type or gender, as explained below.

5.2.1 Introducing and Withdrawing Promotional Codes. The availability of promo codes drew many to Uber for the first time, since it made Uber cheaper than other commonly used forms of public transportation, such as auto-rickshaws, as captured by R3: *"I used Uber because it was cheaper than the CNGs (auto-rickshaws). The most vital factor for me, I would say, is that I didn't have to bargain at all with the drivers. I knew the estimated fare."* Thus, Uber brought new users the promise of cheaper and standardized fares, making it more attractive than public transportation. It was also higher quality and afforded more comfortable rides, in addition to offering a welcome alternative to the hassle of bargaining. We can see how availability and ease of access to promo codes could be a source of marginalization. This was evident as promo codes became more scarce and riders began to search for means of reducing the high fares imposed by Uber, on Facebook or in their social circles. The promo codes were selectively introduced and accessed, and those who had the resources and/or knew how to procure them were at an advantage over others who did not.

5.2.2 Impact of Policies. Policies introduced with the roll-out of Uber also resulted in marginalization. The most notable example of this was in the case of the drivers, given the strict limitations regarding who could become a driver with what license. Uber requires that drivers in Bangladesh have a professional license. This rule left the participants with a non-professional license feeling marginalized as they could not join Uber as drivers—as reflected in R1's comment, *"I wanted to sign up for Uber but I have a non-professional license. [...] so, I could not join."* In addition, our participants shared that a referral was required to sign up as an Uber driver. When we asked one driver (D12) about the process for enlisting as an Uber driver, he asked *"So, how many cars do you want to register? I can sign you up for as many as you want."* Yet, access to this kind of information was largely absent during our study. There were participants who wished to sign up as drivers but were either not informed of the process for signing up or did not have the right kind of license.

5.2.3 Reinforcing Existing Forms of Marginalization. There were no women drivers who were registered with Uber, based on our research and what we were told by all drivers and riders. One

driver (D6) commented on this phenomenon: *"Women drivers won't be able to last in Uber because various types of people get in [the car]. Then it will be a problem for them [women drivers]. Do they have women drivers in foreign countries?"* This did not come as a surprise to us, since it was simply reinforcing pre-Uber forms of marginalization. Women have limited mobility in many conservative cultures [36, 46, 66] such as Bangladesh [16]. In the absence of policies that work actively to relieve systems of marginalization, apps and other technologies are more likely to reinforce them.

To summarize, the way in which Uber was introduced and run led to different forms of marginalization, as perceived by its target users (and our participants). Uber's marketing strategies—such as the introduction of promo codes, and its policies—such as those determining who could be a driver, both played a role towards introducing new forms of marginalization. By not actively participating to address prior patterns of marginalization, such as in the case of women's inability to play the role of an Uber driver, Uber was also complicit towards reinforcing such patterns. Whether or not these features of Uber's roll-out intended to marginalize *per se*, it was how they were perceived by our participants.

5.3 Powerlessness

According to Young, *"the powerless are [...] those over whom power is exercised without their exercising it; the powerless are situated so that they must take orders and rarely have the right to give them. Powerlessness also designates a position in the division of labor and the concomitant social position that allows persons little opportunity to develop and exercise skills"* [80]. The adoption and use of Uber in Bangladesh elicits this dimension of oppression in several ways—among them, ride cancellations due to the inability to use maps, lack of accountability and responsiveness of Uber, an asymmetrical rating system that renders drivers powerless before unthinking riders, and a complex payscale. We present these findings below.

5.3.1 Map-Reading and Ride Cancellations. Unfamiliarity with maps not only manifested as cultural imperialism and marginalization, but also created a sense of powerlessness when drivers and riders were unable to interpret them correctly. For example, figuring out how to locate oneself on the map and pin a different pick-up location was a non-trivial task, as shared by one driver participant:

> *"Some passengers do not understand the app. I do not know about the app. Passengers pin locations in the maps in wrong places. This morning a passenger pinned his location at Dhanmondi 32. He was asking me to go to Square Hospital (Dhanmondi 15). I turned my car and there was a jam. He told me he made a mistake. I was at 27 and there was a jam, so I told him to cancel the call." (D3)*

These mistakes may have been on account of the users' literacies, but they cost the passengers who ended up being charged for ride cancellations which, to begin with, were factors that made passengers experience powerlessness. However, cancellation charges were introduced only about a month after Uber's initial roll-out [67]. In the absence of any penalty to the riders in this initial period, it was the drivers who suffered. D5 shared that a passenger made a request four times and canceled each time. He added, *"I called him and asked him whether he wanted to go. His response was not clear to me. But I could see his location, he was very close to me. I do not know whether he understands the system."* In this period, the drivers could not cancel any rides on their own. This meant that they would be forced to stay at a location until the riders canceled. However, a cancellation charge of 50 Taka (USD 0.6) was imposed almost a month after the introduction of Uber [67]. The number of cancellations and unattended requests from riders came down as they paid more attention to these details over time.

> *"I received a message on my mobile that if I cancel after five minutes, Uber will charge me 50 Taka. I wonder if they have something like that for the drivers as well. I get it that sometimes I do not pay much attention to the calls…" (R2)*

Even after Uber had allowed cancellations on the drivers' end, they felt constrained by the lack of flexibility they had in selecting their rides based on the riders' destinations, which is something they were accustomed to before Uber [2, 31]. They shared that Uber representatives were checking the drivers' responses to requests for rides and directing them to comply with these requests:

> *"One day I canceled a lot of rides. Because I didn't want to go to the directions for the requests that I was getting. If in the evening, I go to Uttara, I have to return with an empty car. So, then they messaged me saying, 'Salam Faruk Bhai, this is your last warning. If you receive a request, finish it.' " (D1)*

Feelings of powerlessness on account of canceled rides can also be understood from the perspective of the additional autonomy drivers had, however. Given the many requests they received, they felt that they could afford to cancel them and wait for a request in the direction they wished to go, before being directed otherwise by Uber. This freedom and autonomy came thus as a double-edged sword.

5.3.2 Fare Calculation and Lack of Accountability. Not unlike the maps, the algorithm for calculating charges was difficult to understand and left both passengers and drivers feeling at a loss. Uber calculates the passenger's fare based on his/her distance traveled and the waiting time of the vehicle in addition to the fixed base fare [77]. In several instances, we found that this distance was not calculated correctly. One participant shared his experience when the distance between point A and point B was approx. 2 KM, but the application had calculated it as approx. 9 KM:

> *"Not only is the distance from Gulshan 2 to Gulshan 1 not 9+ KM, they even got the pickup time wrong (and no, the driver did not start the trip before picking me up, as I specifically look out for that after a previous bad experience). To top it all off, Uber has started charging me for ghost trips all of a sudden. Of the three ghost charges, they automatically reversed the first two even before I noticed them, but the third one is yet to be reversed. By the way, none of these charges show up anywhere on 'My Trips' on the app." (FB9)*

These "ghost trips" put off several riders. The distances would end up getting reversed before the rider had a chance to report them to Uber. The lack of transparency, however, left users all along the continuum of *"I do not really care"* to labeling the system "*#PureEvil*".

> *"#PureEvil*
> *From Uttara to 300 feet Uber charged 400 (it was 280 when I went), but on our way back, suddenly I found out now Uber wants to rip me off by demanding 800. No fare calculation, nothing, just plain extortion, same as our beloved CNG drivers; only difference is Uber is doing it digitally. #Uber #PureEvil" (FB10)*

The confusion about fare calculation and the sense of powerlessness that resulted from it was not limited to riders. Drivers also faced difficulties explaining charges to the riders. Some riders believed that the drivers were exploiting them by gaming the application to overcharge them. They blamed these drivers for the *"unfair"* charges, although the drivers, as they told us, did not have control over how the application calculated the fare. Lack of transparency in the fare breakdown thus caused tension and distrust, which has also been documented in Western contexts [22, 49]. Several drivers mentioned their helplessness on such occasions:

> *"What can I do here? There was this lady the other day who blamed me for the charges. She was going to New Market. She told me that I was working for Uber and I was a part of their plan. What did I do here? You have to pay me what the application shows. I do not*

have any control over how the it works. It is not my fault if the [rider's] application does not show the fare."(D9)

This sense of powerlessness was further exacerbated by the lack of responsiveness and accountability on Uber's end. When drivers and/or riders wished to communicate with Uber to lodge complaints, they felt lost. The app did not explain how this could be done and the local complaint number did not appear to take any calls: *"Whenever I call, I find it switched off." (D8)*

5.3.3 Asymmetrical Rating Systems. The rating system, in spite of its ambiguity as mentioned earlier, did give passengers a lot of power. Drivers, however, felt "helpless" because they were not able to express their frustrations through the rating system. For example, they expressed concern regarding how riders treated their cars such as eating food or leaving trash. While this concerned the drivers we interviewed, they felt that there was nothing they could do in these scenarios and that it was not their place to instruct riders how to behave in their cars:

"Many types of passengers get inside the car. But not all people are same. I can't really tell people what to do. I invested a lot in my car. It hurts me to see that some people are so careless [inside the car]. Just yesterday, a passenger ate food and left the trash inside my car. They probably would not do it if it were their own. I fear that if I say anything, I will get one star. I have faced this before." (D11)

This was complicated further as riders were also actively participating on Facebook groups to "rate" drivers, also resulting in feelings of powerlessness for the drivers. Several study participants chose to share positive experiences with their Uber drivers on Facebook, posting the drivers' identifiable information such as pictures, mobile numbers, car registration numbers, and more. The individuals who shared this information would give a description of what they liked (or did not like) about their ride and why. They stated that these posts would allow other individuals on the group to identify which drivers they should avoid and/or which would be better to ride with. The posts would also list (and rate) ride attributes, such as driving manners or cleanliness. Not satisfied with the 1-5 rating of Uber, riders came up with their own means of evaluating their rides. As one rider shared on Facebook:

"These drivers are learning about a new system. Some of them are really good and some of them are bad. I regularly post in the group with my riding experience. I think it is necessary to promote the good drivers besides identifying the bad drivers. Otherwise, the drivers would lose motivation driving with Uber." (FB3)

Here we see that it is not Uber that is the source of the drivers' powerlessness, but the riders' response to Uber, as enacted via their Facebook activity.

5.3.4 Complex Payscales. Passengers were also impacted by the complex payscales imposed by Uber. Uber charges are not a constant for the same origin/destination: fares are calculated based on the supply/demand at a given time and *surge pricing*—another characteristic that can also be understood as a form of cultural imperialism—thus leaving passengers very confused [5]. Participants who understood how surge pricing worked explained it to others, but users were unclear about when it was active (or not). One Facebook participant challenged this notion:

"On the very first day I installed Uber. I changed my location to different cities and checked their situations (charges). When Uber introduced surge pricing, first they should have given a notification/general notice, same as they did when they increased the rates in bd (Bangladesh). Secondly, that surge pricing multiplier [should] remain visible in the application, so a user (rider) can know how much to multiply. Thirdly, if there was surge pricing, price would be same for both routes at the same time, isn't it?" (FB2)

In sum, there were several aspects of Uber's introduction that resulted in a sense of confusion, helplessness, and powerlessness among participants. Ride cancellations caused chaos and led to unexplained charges, but there was a general lack of accountability from Uber's end. The rating systems seemed unfair—resulting in asymmetrical freedoms for the riders and drivers, and the shifting payscales were unfamiliar and confusing—such as in the case of surge pricing. We note that in some cases, like with the drivers canceling rides, the roots of the powerlessness lay in the increased autonomy and flexibility that Uber offered. In others, such as the Facebook ratings for drivers, it was not the service but the riders' response to the service that resulted in powerlessness.

5.4 Exploitation

Young describes exploitation as the *"transfer of the results of labor"* from one group to another and benefiting the latter. The injustice caused by exploitation shows how power, status, and wealth can lead to relations of injustice and inequality between the haves and the have-nots. An exploitative system uses the energies of the have-nots to secure and augment the power, status, and wealth of the haves [80]. There are several aspects of the adoption and use of Uber in Bangladesh that elicit this dimension of oppression.

5.4.1 Exploiting Existing Infrastructures. Arguably, Uber's very introduction in Bangladesh may be seen as exploitative. As mentioned, Uber was operating illegally, using the infrastructure and resources in Bangladesh (*e.g.,* roads, cars) without actually contributing, such as through paying taxes or providing drivers with benefits. The lack of accountability discussed earlier meant that Uber was not liable for its operation in Bangladesh, a situation that could potentially put riders and drivers at risk. Here, Uber exploited the absence of a robust law enforcement system to its financial advantage.

5.4.2 Potential for Earning More, More Opportunities for Exploitation. Uber's operations in Bangladesh arose from the fact that drivers (and owners) viewed it as an opportunity to make additional wages, compared to what they could earlier. Some drivers were also happy that Uber offered autonomy as well as higher wages; here, we confirm Ahmed et al.'s findings [2]. These were natural draws for drivers. D2 shared his thinking:

> *"My friend (who was not an Uber driver) told me that I earn like 50,000 Taka (USD 625) per month. Now I could earn like 100,000 (USD 1250). He asked me to listen to him. Then I thought a lot because I had many regular passengers [under the Rent-A-Car business]. I thought okay let's invest one week and see if it is a loss for me. I do not have to answer to anyone. Then I worked for a week. For the first week, I earned like 30,000 (USD 375). Then I decided I have to do regular duty for Uber. It's worth it. If I drive continuously, not missing a day in a week, I earn like 35,000 (USD 438)." (D2)*

While Uber granted economic benefits to some, it also played into what was already an unfair and exploitative system in ways that negatively impacted many drivers. An example of this is those who were working as non-driving partners—people who had cars and hired drivers to work on their cars as Uber drivers. These "employers" ended up adopting various salary structures for their chauffeurs. In one example (D10), 25% of the earnings went to the driver while the rest were kept by the private car owner. In the case of a driver employed by a Rent-A-Car service (D7), while the payment was better, the workload had also increased: *"Their payment is better than before, but the workload is higher too. I have to give 51 trips each week to receive my full salary."* All drivers mentioned that their earnings had grown after they joined Uber, but not in a fair way. Their earnings depended on whether they owned the vehicle, were employed by an owner (where each case was different), or were employed by a Rent-A-Car service. There were no laws or policies in place to protect

these drivers from opportunities for exploitation. Here again we see that existing structures led to potentially greater exploitation as a result of Uber's introduction, due to the potential it offered non-driving car-owners for increased earnings.

5.4.3 Potential Misuses of the App. Some riders accused drivers of starting trips prior to their boarding the vehicle. Several mentioned that the drivers would give them a call and instruct them to walk to a more convenient location for pick-up. Riders would find that the drivers had already started the trip before the rider got into the car. This frequently resulted in a back-and-forth between the rider and driver. Some drivers defended themselves by saying that they had started the trip because they had arrived at the pick-up location, but not all had an explanation. For example, R8 said, *"I asked him why he did it. He was not answering me at all. At one point, he told me to get down from the car."*

Though some drivers may have intentionally exploited their riders, it is also likely that this was rooted in their lack of familiarity with the app: when to start the trip or how to use the map (as mentioned earlier). There was no way of identifying the intent, naturally, and this led to repeated misunderstandings. As D11 said, *"You have to know the roads, the map does not know about the traffic at all. You have to know it all by yourself. The map does not tell you about the traffic jams. I do not take help from the map when I drive."*

In cases when the driver would fail to start the trip, verbal bargaining would commence for deciding the fare. We found from our observation of Facebook activity that the riders were learning to avoid such situations by checking whether their drivers had started the trip. They also shared this as a "moral" for other riders: *"Moral—always check if your Uber Driver has activated the meter or not" (FB11).*

Misuse of a new app is not surprising, and in cases where the intent was not to exploit, users followed their sense-making process to adjust to the app. In the short term, however, it appeared exploitative to some who were yet to figure out the app, which generally included those who were less tech-savvy and more marginalized.

5.5 Violence

Violence refers to the phenomenon where *"members of some groups live with the knowledge that they must fear random, unprovoked attacks on their persons or property"* [80]. The argument Young places for framing violence as institutional or systematic is because it is directed towards people on account of their being a part of a particular community. The knowledge that is shared by all members of oppressed groups that they are liable to violence is also another aspect of oppression through violence. There are several aspects of the adoption and use of Uber in Bangladesh that elicit this dimension of oppression, such as women's concerns regarding sexual violence, lack of safety for drivers, fare disputes leading to verbal violence, and distrust between actors.

5.5.1 Verbal Disputes. As alluded to earlier, fare disputes were common and inevitable, since the pricing system was often unclear to riders, drivers, or both. Drivers voiced that they had experienced uncomfortable interactions with passengers who did not understand the system, while riders complained that they had been thugged by their drivers because the app did not show the fare that they (the drivers) demanded. These situations would lead to conflicts that Uber, naturally, could not be resolved right away. Some drivers took advantage of this situation by forcefully extracting more money:

> *"I said it can be 200 (USD 2.5) or highest 250 (USD 3.13), how can you claim 450 Taka (USD 5.63). He would not go until I gave him the money. He misbehaved by shouting. It was 11 pm and [an] embarrassing situation for us. Then the caretaker of my house tried*

to make him calm but he was shouting. I also argued, gave him 250 Taka (USD 3.13), then he left." (FB13)

These conflicts often got escalated, we were told, because the Uber app was not well understood by both parties. For instance, the application of promo codes before rides was not clear to some riders:

"He told me that he has got a discount for 200 Taka, he will give me 200 Taka less.[...] I told him if you get the discount they will show you but if you do not give me the money then I have to give it from my pocket. He argued for 1 hour. Then his friend came to resolve the issue. His friend asked the passenger, 'Did you activate the discount in your message?' The passenger said no. 'Then you won't get it'. Finally, he gave me the money. But discount creates a problem. Some people get it and some people do not. We have to bow before them." (D8)

In the previous section, we touched upon the confusion and perceived helplessness that resulted from changes in Uber's pricing. This also resulted in tensions between drivers and riders on several occasionsm, we were told:

"Yesterday a passenger was ready to fight with me. The bill was 415 Taka (USD 5.19). He told me that the bill for the same destination was 350 Taka (USD 4.38) last time and he came like 15 days ago. I told him that, 'Sir, the bill has been increased like seven days ago.' He didn't listen to me. He was like 45. Then he was very mad at me. I asked him, 'Why are you getting mad at me, what did I do?' He told me that I am a part of Uber. I asked him, 'What did I do? Did I increase the fare? I followed the route that you asked me to. I even asked you before starting the ride. What's my fault here?' He took my photo, abused me, and took a photo of my mobile with the bill. I said, 'OK - do it.' I was very afraid. He was about to beat me. He gave me threats." (D2)

5.5.2 Unequal Measures of Safety. Participants agreed that existing modes of public transportation, such as buses or auto-rickshaws, did not provide the quality of experience that Uber did. Women participants, in particular, were relieved to be able to rely on Uber for safe travel. They did not evince the same levels of trust towards public transportation in Dhaka.

"I do not get on buses. You know how the buses are in Dhaka. It is not safe for young women. Normally, I take a rickshaw or CNG. I did have some bad experiences with Uber, but I would recommend it to other women passengers. At least Uber knows everything about their drivers." (R8)

The belief that Uber knew everything about its drivers came from the knowledge that Uber drivers were required to submit their identification and work history documentation to the company at the time of employment. The Facebook groups provided a platform for people to discuss their experiences, their workarounds around certain technical complications, and more. One of the threads discussed there was about women's safety. Women participants generally felt safer riding an Uber in comparison to other available options. R5 also remarked, *"You know how the public buses are. I would not call it unsafe but there are certain people who would just intentionally bump into you. That is really uncomfortable for me."* This sense of safety also came from the fact that drivers' names, numbers, and car numbers were recorded on the Uber app.

Drivers, however, voiced safety concerns on exactly this count. They could only see names and email addresses of their riders, whereas the riders could see the drivers' car numbers, names, and phone numbers. Also, Uber required the drivers to submit their national identification card, car registration documents, as well as other supplementary documents before registering them. Riders, on the other hand, only needed to have a smartphone, an email address, and a phone number in order to register as a passenger. This made the drivers uneasy:

> *"You know everything about us. But we do not know anything about you. We only see your email address and name. We do not have anything else. The person who wants to hijack, he can generate 100 email ids per hour. If his target is like robbing people he will request." (D4)*

5.5.3 Adoption of Safety Measures. Although there were no public reports of sexual assault by Uber drivers in Bangladesh, and our women participants said they felt safer using Uber, reports on international media had made them wary of such incidents. As R6 said, *"My sister told me about these incidents and I am very careful after that. I do not usually go with drivers who have ratings under 4."* Several participants took these ratings into consideration (although, as mentioned earlier, they also found them ambiguous). For example, one participant said that she would keep canceling rides until she found a driver with a relatively high rating. However, when the driver called to ask why, she did not want to tell him the real reason:

> *"[...]I did not want to tell him that he had a bad rating. He asked me several times over the phone whether I wanted to go to the same spot and why I canceled his ride if I wanted to go to the same destination. I had to lie to him that I am going to the another destination, finally, he hung up." (R7)*

Once again, (women) participants on the Facebook groups shared various suggestions on how to exercise safety measures while taking Uber rides, such as by taking pictures of the driver and car:

> *"Before getting into the car, we should take pictures of the driver and the number plate so he is aware of what he does. I hope he does not mind. It does not matter if I have it. If I can show him I know, then it goes in my favor." (FB12)*

Users of both Facebook groups shared suggestions for avoiding drivers who had caused trouble for their riders such as using the Truecaller mobile app[2]. Riders would flag numbers of certain drivers as *Fraud Uber Driver* or *Bad Uber Driver*. If a rider had Truecaller installed on their phone, they could identify that the Uber driver they were matched with had been flagged. This could allow them to avoid flagged drivers even if Uber did not remove them from its network. R7 mentioned that she had used this feature a couple of times, adding, *"Who wants to ride with a driver if I can see that he is not a safe driver? I am concerned about my safety." (R7)*

6 DISCUSSION

Our analysis of the experiences of Uber riders and drivers in Dhaka illustrates the subtle ways in which Uber's introduction builds on and plays into existing infrastructural, social, and cultural inequities. While it is true that a small segment of the population, such as women of a certain socio-economic status, tech-savvy drivers who own vehicles, or local innovators may have benefited from Uber's roll-out, we also observed that the introduction and adoption of Uber in Dhaka resulted in participants' experiences of oppression, surfacing cultural imperialism, marginalization, powerlessness, exploitation, and violence. Our research highlights the need for future longitudinal studies on sharing economies that incorporate and potentially compare availability, use, and non-use of such technologies across more and different sites. Such studies could potentially involve wider segments of the population and be in dialog with theories that engage both macro- and micro-level processes of oppression, such as the one put forward by Patricia Hill Collins—"interlocking systems of oppression," [21]—and a growing body of scholarship on relational justice.

The *faces of oppression* described in our findings are not mutually exclusive. Many statements shared by our participants could be interpreted as expressions of multiple faces of oppression. For example, rating systems are a technical, algorithmic concept that may be understood as a mode of

[2]https://www.truecaller.com/

cultural imperialism, as they were by our participants. However, these also resulted in the drivers feeling powerless before the riders. They further emerged as empowering to women in that they afforded them a greater sense of safety. Our findings are not meant to include a comprehensive list of experiences and practices of oppression, but provide examples of their expressions that surfaced in our study. Taken together, the manifestations of oppression in the introduction and uses of Uber in Dhaka are illustrative of the larger thesis of this paper, which is to highlight the strong connection between mobility and justice, complicating a dominant neoliberal discourse on sharing economies in general and Uber in particular. We now list the implications of our research for emerging lines of work in CSCW, HCI, and connected disciplines.

6.1 Algorithms and Lived Experiences of Oppression

Research on algorithms has highlighted both how powerful they are and how difficult they are to be understood [82]. These platforms succeed precisely because they hide the logistical as well as regulatory aspects of transactions such as hailing a cab under deceptively simple and abstract interfaces [27]. At the same time, algorithms' automatic decision-making and opaque procedures may lead to confusion, dissatisfaction, and hidden biases (*e.g.,* [7, 35, 62]). For example, Eslami et al.'s Facebook study notes that more than half of their participants were not aware of a newsfeed curation algorithm [26]. These participants felt surprised, angry, and betrayed when they learned about invisible decisions taken by algorithms of which the users were unaware. Other research on the politics of algorithms has highlighted the biased nature of their outcomes, as in the case of search results [15], or the political nature of categories that underlie their decision-making [41].

Contributing to growing scholarship on the politics of algorithms, our research highlights how the opaque nature of algorithms and their veneer of objectivity can lead to real-life experiences and practices of marginalization, powerlessness, and violence. In the context of our study, we see manifestations of the lived experience—algorithms in verbal disputes between drivers and riders, a general sense of mistrust, and concerns regarding physical safety. While scholars have begun to sketch some of the social and political challenges associated with algorithms, they have not—to the best of our knowledge—charted how the opacity of algorithms can lead to experiences and practices of domination and oppression. The lived experience of algorithms is an area of research that is of high significance for HCI, given the increasing penetration of computing technologies into virtually every aspect of our daily lives.

6.2 Postcolonial Computing and the Double Bind of Agency

Research in the area of postcolonial computing within HCI has pointed out the challenges and pitfalls of translating technologies across geographies and cultures (*e.g.,* [12, 40]). Our research highlights how technologies such as Uber (like other actors of the sharing economy) influence the distribution of resources in ways that are inherently unjust. We saw many of these challenges in how Uber played into the existing unjust institutional and social infrastructure, the example of car owners taking advantage of drivers being a case in point. Furthermore, we found our participants struggle to use the Uber app as it imposed the use of English, map-reading, and an unfamiliar rating system. The participants' lack of access to information regarding the operations of Uber, in addition to a lack of accountability on Uber's part, led to even more confusion. Finally, we observed how the veneer of objectivity and opacity of the algorithms led to experiences of verbal disputes and experiences of powerlessness, as expounded above.

The data we collected from Facebook groups played an instrumental role in helping us understand the responses of Uber riders. That they were able to voice their frustrations and devise workarounds—like Pathao—also highlights that they were not completely powerless, and must not be seen as such. HCI research that adopts a postcolonial computing lens tends often to either overlook this

agency of the user or glorify it. We emphasize that agencies can be *creative* (as witnessed when users tried to discuss and devise alternatives for Uber in Bangladesh) and also *destructive* (in the forms of potential harassment or verbal violence). This warrants greater exploration.

6.3 Need for Dialog Between Technology Design and Policy-Making

Recent CSCW and HCI scholars have called into attention the need for engagement and conversation with policy-makers, particularly with the aim of informing policy-makers from a user-centered perspective [37, 45]. There are different kinds of expertise that researchers and policy-makers contribute that can be beneficial to each other. In the case of the sharing economy, how users engage with platforms bears direct consequence to a city's, country's, or region's resources, making the role of policy in this regard increasingly relevant.

Our study highlights three points here. First, we underscore the gaps in existing infrastructures that drove users to Uber in the first place. In this manner, the introduction and use of Uber serves as a probe that foregrounds existing needs and possibilities to improve the transportation system in Dhaka. Second, engaging with research like ours can inform an understanding of the social impact of the introduction of technological platforms such as Uber. This is informative for policy-makers in Bangladesh, for example, as they can see reasons why the service—despite being banned—is in use and developing a growing presence. By understanding the value that users draw from the platform and, at the same time, recognizing its negative impact, policy-makers might be better equipped to examine and shape Uber's roll-out, as opposed to imposing an ineffective ban. Third, there is an important lesson in this for CSCW and HCI research stressing the need for technology designers to actively engage and work with policy-makers as well as with researchers in the social and political sciences. Technical solutions cannot work in a vacuum and they likely do more harm than good in the absence of appropriate policies and regulations.

7 CONCLUSION

Through our study of Uber in Dhaka, Bangladesh, and drawing on the framework of oppression offered by feminist political philosopher Iris Marion Young, our paper contributes a nuanced understanding of injustices that riders and drivers experienced in their use of Uber. These lived realities are widely prevalent but remain relatively understudied, especially in the case of the Global South. Our paper also contributes to emergent research on the politics of algorithms by illustrating the lived experiences of domination and oppression that result from algorithms' opacity and veneer of objectivity. Our analysis surfaces creative and destructive agencies to enrich the postcolonial computing discourse, and also underscore the need for HCI and CSCW research to be more deeply integrated with policy. Our research thus contributes to a growing body of literature in mobility studies by calling attention to *the tangled web of mobility and justice.*

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REFERENCES

[1] The Asian Age. 2016. 53 new private cars ply Dhaka roads every day. NEWS Article. (23 September 2016). http://dailyasianage.com/news/31759/53-new-private-cars-ply-dhaka-roads-every-day.

[2] Syed Ishtiaque Ahmed, Nicola J Bidwell, Himanshu Zade, Srihari H Muralidhar, Anupama Dhareshwar, Baneen Karachiwala, Cedrick N Tandong, and Jacki O'Neill. 2016. Peer-to-peer in the workplace: A view from the road. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. ACM, 5063–5075.

[3] Sayeda Akter. 2008. Car hire companies boom. (Jun 2008). http://www.thedailystar.net/news-detail-39652

[4] Prothom Alo. 2016. BRTA to review Uber ban. NEWS Article. (17 January 2016). http://en.prothom-alo.com/bangladesh/news/137307/BRTA-to-review-Uber-ban.
[5] Andrew. 2014. A Deeper Look at Uber's Dynamic Pricing Model. Article. (12 March 2014). https://newsroom.uber.com/guest-post-a-deeper-look-at-ubers-dynamic-pricing-model/.
[6] The Independent Bangladesh. 2016. Traffic congestion in Dhaka. NEWS Article. (12 July 2016). http://www.theindependentbd.com/home/printnews/50764.
[7] Solon Barocas, Sophie Hood, and Malte Ziewitz. 2013. Governing algorithms: A provocation piece. (2013).
[8] Victoria Bellotti, Alexander Ambard, Daniel Turner, Christina Gossmann, Kamila Demkova, and John M Carroll. 2015. A muddle of models of motivation for using peer-to-peer economy systems. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. ACM, 1085–1094.
[9] Victoria Bellotti, Sara Cambridge, Karen Hoy, Patrick Shih, Lisa Renery Handalian, Kyungsik Han, and John M Carroll. 2014. Towards community-centered support for peer-to-peer service exchange: rethinking the timebanking metaphor. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2975–2984.
[10] Yochai Benkler. 2004. Sharing nicely: On shareable goods and the emergence of sharing as a modality of economic production. *Yale Law Journal* (2004), 273–358.
[11] Jeremy Bentham. 1996. *The collected works of Jeremy Bentham: An introduction to the principles of morals and legislation*. Clarendon Press.
[12] Nicola J Bidwell. 2016. Moving the centre to design social media in rural Africa. *AI & society* 31, 1 (2016), 51–77.
[13] Rachel Botsman. 2013. The Sharing Economy Lacks a Shared Definition. Article. (21 November 2013). https://www.fastcompany.com/3022028/the-sharing-economy-lacks-a-shared-definition.
[14] Rachel Botsman and Roo Rogers. 2011. *What's mine is yours: how collaborative consumption is changing the way we live*. Collins London.
[15] Taina Bucher. 2012. Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *new media & society* 14, 7 (2012), 1164–1180.
[16] Jason Burke and Saad Hammadi. 2013. Bangladesh simmers as Islamic conservatives and progressives clash. (Apr 2013). https://www.theguardian.com/world/2013/apr/16/bangladesh-hefazat-e-islam-women.
[17] Ryan Calo and Alex Rosenblat. 2017. The Taking Economy: Uber, Information, and Power. (2017).
[18] John M Carroll and Victoria Bellotti. 2015. Creating value together: The emerging design space of peer-to-peer currency and exchange. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. ACM, 1500–1510.
[19] Noel Cass, Elizabeth Shove, and John Urry. 2005. Social exclusion, mobility and access. *The sociological review* 53, 3 (2005), 539–555.
[20] Lulu Chang. 2016. Uber continues its quest for world domination with expansion into Bangladesh. (Nov 2016). https://www.digitaltrends.com/mobile/uber-expands-into-bangladesh/
[21] Patricia Hill Collins. 2002. *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*. Routledge.
[22] Tawanna R Dillahunt, Vaishnav Kameswaran, Linfeng Li, and Tanya Rosenblat. 2017. Uncovering the Values and Constraints of Real-time Ridesharing for Low-resource Populations. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 2757–2769.
[23] Tawanna R Dillahunt and Amelia R Malone. 2015. The promise of the sharing economy among disadvantaged communities. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. ACM, 2285–2294.
[24] Benjamin G Edelman and Michael Luca. 2014. Digital discrimination: The case of Airbnb. com. (2014).
[25] Eyal Ert, Aliza Fleischer, and Nathan Magen. 2016. Trust and reputation in the sharing economy: The role of personal photos in Airbnb. *Tourism Management* 55 (2016), 62–73.
[26] Motahhare Eslami, Aimee Rickman, Kristen Vaccaro, Amirhossein Aleyasen, Andy Vuong, Karrie Karahalios, Kevin Hamilton, and Christian Sandvig. 2015. "I Always Assumed That I Wasn'T Really That Close to [Her]": Reasoning About Invisible Algorithms in News Feeds. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM, New York, NY, USA, 153–162. https://doi.org/10.1145/2702123.2702556
[27] Ed Finn. 2017. *What Algorithms Want: Imagination in the Age of Computing*. MIT Press.
[28] Rainer Forst. 2007. Radical Justice: On Iris Marion Young's Critique of the âĂIJDistributive ParadigmâĂİ. *Constellations* 14, 2 (2007), 260–265.
[29] Sarah Fox, Jill Dimond, Lilly Irani, Tad Hirsch, Michael Muller, and Shaowen Bardzell. 2017. Social Justice and Design: Power and oppression in collaborative systems. In *Companion of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. ACM, 117–122.
[30] Nadine Freischlad. 2017. TMeet the fast-growing Go-Jek of Bangladesh. News Article. (21 February 2017). https://www.techinasia.com/pathao-go-jek-bangladesh.

[31] Mareike Glöss, Moira McGregor, and Barry Brown. 2016. Designing for labour: uber and the on-demand mobile workforce. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. ACM, 1632–1643.
[32] Leo A Goodman. 1961. Snowball sampling. *The annals of mathematical statistics* (1961), 148–170.
[33] Greg Guest, Arwen Bunce, and Laura Johnson. 2006. How many interviews are enough? An experiment with data saturation and variability. *Field methods* 18, 1 (2006), 59–82.
[34] Juho Hamari, Mimmi Sjöklint, and Antti Ukkonen. 2016. The sharing economy: Why people participate in collaborative consumption. *Journal of the association for information science and technology* 67, 9 (2016), 2047–2059.
[35] Kevin Hamilton, Karrie Karahalios, Christian Sandvig, and Motahhare Eslami. 2014. A path to understanding the effects of algorithm awareness. In *CHI'14 Extended Abstracts on Human Factors in Computing Systems*. ACM, 631–642.
[36] Susan Hanson. 2010. Gender and mobility: new approaches for informing sustainability. *Gender, Place & Culture* 17, 1 (2010), 5–23.
[37] Brent Hecht, Loren Terveen, Kate Starbird, Ben Shneiderman, and Jennifer Golbeck. 2017. The 2016 US Election and HCI: Towards a Research Agenda. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, 1307–1311.
[38] Tapio Ikkala and Airi Lampinen. 2015. Monetizing network hospitality: Hospitality and sociability in the context of Airbnb. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing*. ACM, 1033–1044.
[39] Lilly Irani and M Silberman. 2013. Turkopticon: Interrupting worker invisibility in amazon mechanical turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 611–620.
[40] Lilly Irani, Janet Vertesi, Paul Dourish, Kavita Philip, and Rebecca E Grinter. 2010. Postcolonial computing: a lens on design and development. In *Proceedings of the SIGCHI conference on human factors in computing systems*. ACM, 1311–1320.
[41] Nassim JafariNaimi. 2018. Our Bodies in the Trolley's Path, or Why Self-driving Cars Must *Not* Be Programmed to Kill. *Science, Technology, & Human Values* 43, 2 (2018), 302–323.
[42] Nassim JafariNaimi, Lisa Nathan, and Ian Hargraves. 2015. Values as hypotheses: design, inquiry, and the service of values. *Design Issues* 31, 4 (2015), 91–104.
[43] Naveena Karusala, Aditya Vishwanath, Aditya Vashistha, Sunita Kumar, and Neha Kumar. 2018. Only if you use English you will get to more things: Using Smartphones to Navigate Multilingualism. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, 573.
[44] Joseph Kasera, Jacki O'Neill, and Nicola J Bidwell. 2016. Sociality, Tempo & Flow: Learning from Namibian Ridesharing. In *Proceedings of the First African Conference on Human Computer Interaction*. ACM, 36–47.
[45] Jofish Kaye, Casey Fiesler, Neha Kumar, and Bryan Semaan. 2017. Policy Impacts on the HCI Research Community. In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, 1300–1302.
[46] Olga Khazan. 2013. 'Negative Physiological Impacts'? Why Saudi Women Aren't Allowed to Drive. (Oct 2013). Retrieved from https://www.theatlantic.com/international/archive/2013/10/-negative-physiological-impacts-why-saudi-women-arent-allowed-to-drive/280343/.
[47] Airi Lampinen and Barry Brown. 2017. Market Design for HCI: Successes and Failures of Peer-to-Peer Exchange Platforms. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 4331–4343.
[48] Airi MI Lampinen. 2014. Account sharing in the context of networked hospitality exchange. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. ACM, 499–504.
[49] Min Kyung Lee, Daniel Kusbit, Evan Metsky, and Laura Dabbish. 2015. Working with machines: The impact of algorithmic and data-driven management on human workers. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. ACM, 1603–1612.
[50] Michael Luca and Georgios Zervas. 2016. Fake it till you make it: Reputation, competition, and Yelp review fraud. *Management Science* 62, 12 (2016), 3412–3427.
[51] Arvind Malhotra and Marshall Van Alstyne. 2014. The dark side of the sharing economy…and how to lighten it. *Commun. ACM* 57, 11 (2014), 24–27.
[52] Chris J Martin. 2016. The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism? *Ecological Economics* 121 (2016), 149–159.
[53] Sharan B Merriam. 2002. *Qualitative research in practice: Examples for discussion and analysis*. Jossey-Bass Inc Pub.
[54] John Stuart Mill. 1863. *Utilitarianism*. London: Parker, Son and Bourn.
[55] Timo Ohnmacht, Hanja Maksim, and Manfred Max Bergman. 2009. Mobilities and Inequality–An Introduction. *Mobilities and Inequality. Farmham, England* (2009), 1–6.
[56] Daniel Pargman, Elina Eriksson, and Adrian Friday. 2016. Limits to the sharing economy. In *Proceedings of the Second Workshop on Computing within Limits*. ACM, 12.
[57] John Preston and Fiona Rajé. 2007. Accessibility, mobility and transport-related social exclusion. *Journal of Transport Geography* 15, 3 (2007), 151–160.

[58] Sofia Ranchordás. 2015. Does sharing mean caring: Regulating innovation in the sharing economy. *Minn. JL Sci. & Tech.* 16 (2015), 413.
[59] Noopur Raval and Paul Dourish. 2016. Standing Out from the Crowd: Emotional Labor, Body Labor, and Temporal Labor in Ridesharing. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*. ACM, 97–107.
[60] John Rawls. 2009. *A theory of justice: Revised edition.* Harvard university press.
[61] Jon Russell. 2016. Uber launches in Bangladesh to continue its emerging market push. (Nov 2016). https://techcrunch.com/2016/11/22/uber-bangladesh/.
[62] Christian Sandvig, Kevin Hamilton, Karrie Karahalios, and Cedric Langbort. 2014. Auditing algorithms: Research methods for detecting discrimination on internet platforms. *Data and discrimination: converting critical concerns into productive inquiry* (2014).
[63] Joachim Scheiner and Birgit Kasper. 2003. Lifestyles, choice of housing location and daily mobility: the lifestyle approach in the context of spatial mobility and planning. *International Social Science Journal* 55, 176 (2003), 319–332.
[64] Juliet Schor. 2016. Debating the Sharing Economy. *Journal of Self-Governance & Management Economics* 4, 3 (2016).
[65] Amartya Sen. 1993. Capability and well-being73. *The quality of life* 30 (1993).
[66] Rachel Silvey and Rebecca Elmhirst. 2003. Engendering social capital: Women workers and rural–urban networks in Indonesia's crisis. *World development* 31, 5 (2003), 865–879.
[67] The Daily Star. 2016. Tk 50 for cancelling Uber taxi order from now. News Article. (16 December 2016). http://www.thedailystar.net/country/tk-50-cancelling-uber-taxi-order-now-1332865.
[68] The Daily Star. 2017. Beat the traffic mess with bike service app. News Article. (7 March 2017). http://www.thedailystar.net/city/beat-the-traffic-mess-bike-service-app-1372213.
[69] Brad Stone. 2012. My life as a TaskRabbit. *Businessweek. com, September* 13 (2012).
[70] Emmi Suhonen, Airi Lampinen, Coye Cheshire, and Judd Antin. 2010. Everyday favors: a case study of a local online gift exchange system. In *Proceedings of the 16th ACM international conference on Supporting group work*. ACM, 11–20.
[71] Arun Sundararajan. 2016. *The sharing economy: The end of employment and the rise of crowd-based capitalism.* Mit Press.
[72] Dhaka Tribune. 2016. BRTA: Uber 'illegal' in Bangladesh. NEWS Article. (25 November 2016). http://www.dhakatribune.com/bangladesh/dhaka/2016/11/25/brta-uber-illegal-bangladesh/.
[73] Dhaka Tribune. 2016. Uber launches operations in Dhaka. NEWS Article. (22 November 2016). http://www.dhakatribune.com/bangladesh/2016/11/22/uber-launches-operation-dhaka/.
[74] Dhaka Tribune. 2016. Uber may be granted provisional approval. NEWS Article. (29 November 2016). http://www.dhakatribune.com/business/regulations/2016/11/29/brta-legal-action-uber-runs-private-vehicles/.
[75] Dhaka Tribune. 2017. A one-way ticket to anarchy. NEWS Article. (24 April 2017). http://www.dhakatribune.com/opinion/op-ed/2017/04/24/one-way-ticket-anarchy/.
[76] Uber. 2014. How to drive with Uber. Website. (12 March 2014). https://www.uber.com/en-BD/drive/requirements/.
[77] Uber. 2017. How are fares calculated? Article. (15 May 2017). https://help.uber.com/h/33ed4293-383c-4d73-a610-d171d3aa5a78.
[78] Uber. 2017. Paying for your Uber rides. (June 2017). https://www.uber.com/en-BD/blog/dhaka/uberpayment/
[79] Iris Marion Young. 2002. *Inclusion and democracy.* Oxford University Press on Demand.
[80] Iris Marion Young. 2011. *Justice and the Politics of Difference.* Princeton University Press.
[81] Himanshu Zade and Jacki O'Neill. 2016. Design Illustrations to Make Adoption of Ola Technology More Beneficial for Indian Auto-Rickshaw Drivers. In *Proceedings of the 19th ACM Conference on Computer Supported Cooperative Work and Social Computing Companion*. ACM, 453–456.
[82] Malte Ziewitz. 2016. Governing algorithms: Myth, mess, and methods. *Science, Technology, & Human Values* 41, 1 (2016), 3–16.

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