

Infrastructures of Extraction in the Smart City Zones, Finance, and Platforms in New Town Kolkata

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This article explores the infrastructures of value extraction that emerge as the township of New Town Kolkata is being transformed into a “smart” city. As the processes of digitalization take shape amid uncertainties and contradictions, the city becomes a site for intensive data mining. Commercial platforms, such as Uber, use computing infrastructures to predict and orientate consumer behavior, monetize attention and emotion, discipline labor, and maximize profit. Yet if data extractivism is a prominent process of urban digitalization, it is also inextricably linked to broader dynamics of resource extraction, dispossession, and financialization that precede and march along with the making of smart cities. The complementary concepts of urban extractivism and extractive urbanism are apt to capture, I suggest, the entanglement between digital and nondigital forms of value extraction that take place in the smart city. At the same time, the analysis of economic operations in the making of the smart city also prompts reflections on the relations between speculation and extraction.

Keywords: smart cities, extractivism, platforms, postcolonialism, Uber

In a letter from December 2015, the Head of Public Policy of Uber India (“Smart City Proposal,” 2015, p. 101) proposes an agreement between Uber and the Government of West Bengal. Uber offers to contribute to “make New Town Kolkata a smart city” in several ways—creating up to 40,000 jobs, giving opportunities to unemployed youth, women, and marginalized groups; providing the local government with predictive analytics; cooperate with local authorities to provide last-mile connectivity and integrate the existing routes of transport. In return, Uber expects from the government of West Bengal a “favorable treatment” regarding taxes, real estate, and local policies. New Town is an unfinished township in the periphery of Kolkata that is now being turned into a smart city. The negotiation between Uber India and the state government is a snapshot of the relations between strategies of value extraction and smart city projects—relations that, as I will explain later in this article, go well beyond the level of contracts and fiscal leniency.

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Date submitted: 2019–11–21

¹ This article was completed with the financial support of a fellowship from the Center for Advanced Internet Studies (CAIS), Bochum. I thank Rolien Hoyng, Andrea Pollio, Evelyn Wan, and two anonymous reviewers for their generous comments.

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In recent years, scholars have begun to turn their attention to smart urban projects in the Global South. Writing about the 100 Smart Cities program in India (of which New Town Kolkata is part), Ayona Datta (2018) examines the techniques through which smart citizens are produced according to a global technocratic imaginary, as well as the contestations and vernacular translations of this model. Sandeep Mertia (2017) uses “ethnographic vignettes” of significant threads of data-driven urbanism in Delhi to show how the circulation of computing technologies is reconfiguring knowledge production, forms of authority, and identities in and about the city, and in ways that are contingent on, and strongly affected by, contextual factors. These studies disrupt the usual narratives of global smart models, and point to the situated processes through which digital urban technopolitics are materializing in the Global South. Work remains to be done, however, to investigate the many facets through which smart urban projects are reshaping spaces, relations, forms of government, and economies in postcolonial cities.

This article contributes to the analysis of “smart” postcolonial urbanism by exploring the infrastructures of extraction that emerge in the processes of urban digitalization. Sensors, data and analytics, objects, and bodies are used to set up a computing apparatus through which value is extracted from the urban environment at various levels. In their work on the smart city project of Songdo, South Korea, Orit Halpern, Jesse LeCavalier, Nerea Calvillo, and Wolfgang Pietsch (2013, 2015) argue that the inner logic of extensive urban computing is to monetize and manipulate life to the fullest extent, and to create a model of antipolitical urban management that could be sold and replicated. For Halpern and her colleagues, smart city projects like Songdo are a test bed for new technologies of government and business models concerning how to turn every bit of data into profit, and perhaps more importantly, to create solutions that can be exported and sold to other cities. Yet the experiment never ends. In test-bed urbanism, the smart city and all the calculative infrastructures within it become an engine for growth that cannot stop; rather, it is set to continually exceed its technical limits. Though the case of Songdo—an entirely planned smart city, built from scratch by a single actor—is quite extreme in the landscape of smart urbanism in the Global South, the notion of test bed can be flexibly applied to shed light on processes of urban digitalization in different contexts.

In New Town Kolkata, extractive operations are taking place while digital infrastructures are still largely incomplete, or even only on paper. At present, the promised smart city is far from accomplished, as the frequent view of abandoned construction sites, wastelands, and slums in the township testifies. In this context, the notion of a test bed serves to capture the disjuncture between the uncertain development of smart city projects and the forms of extraction that are already taking place across and around these projects. In the Introduction to this Special Issue, Rolien Hoyng points to the incorporation of liminality—conceived as difference, excess, and subalternity—as one of the axes through which smart infrastructures seek to take hold of bodies and environments. The disjuncture between the unfinished technological developments—and the extractive processes that are nevertheless active speaks to the heterogenous, conflicting temporalities of postcolonial urbanism and capitalism—is precisely where the incorporation of liminality manifests in New Town. The disjuncture and test-bed conditions are also the space of speculation, which entertains an intimate yet nonlinear relation with extractive processes, as we will see shortly.

To make sense of the extractive operations that take place in smart cities, I rely on the concept of data extractivism proposed by Evgeny Morozov (2017) to describe a general feature of the digital industry.

Yet data extractivism does not happen in a vacuum. To understand how value is extracted through data and algorithms in smart cities, it is essential to map the wider, deeper geographies of extraction that set up the conditions for smart cities and platforms to come to life and operate. The making of smart cities, and the forms of data extractivism that take place in them, are inherently and variously articulated with both planetary extractive operations, which include mining for minerals, drilling, and fracking for oil and gas, and situated dynamics of land grabbing and financialization.

In this article, I borrow the concepts of urban extractivism (Gago & Mezzadra, 2017; Massuh, 2014) and extractive urbanism (Foote, 2016; Kirshner & Power, 2015) to describe how cities, and especially those that are undergoing “smart” transformations, become terrains of extensive and intensive value extraction, at different levels. Clearly, the categories of extractive urbanism and urban extractivism place emphasis on either side of the process—urban development or valorization—but, I argue, the range of phenomena they describe are deeply linked. By looking at the making of a smart city in New Town Kolkata through the lens of extractive urbanism and urban extractivism, I combine lines of research that are not often connected, including studies on urban financialization, on the datafication of life and labor, and on planetary extraction. I also reflect on the relations between speculation and extraction that emerge from the economic processes that are taking place along with the making of the smart city.

This study is based on research conducted in and on New Town between 2015 and 2019. The smart projects that I investigated were largely in the making, at different stages of implementation; some of them were only on paper, others were being built, and others were being tested. The effects of these infrastructures on the urban environment were still very much indeterminate and not always clearly observable. Combing different sources of data and methods—including the examination of planning and policy documents and media reports, observation, interviews, and personal conversations—I sought to capture the tension between visions and projects of the future and the operations that seek not only to materialize those futures but also to draw out value from them in the present. Hence, in this article, the notion of test bed is not only an analytical tool but also a methodological angle that accounts for the planned, the unfinished, and the experimental as defining aspects of my research.

The article begins by briefly reviewing the history of New Town, and the ongoing processes of digitalization. In the following section, I examine the notion of data extractivism and its inherent relations with other forms of extraction. Next, I look at how specific forms of extractive urbanism and urban extractivism—including land grabbing, real estate speculation, and financialization—precede and proceed with the transformation of New Town in a smart city. I then turn to the struggles of Uber drivers in Kolkata, and their relations with the platform computing infrastructures that seek to maximize value extraction from the urban environment. Finally, I discuss how speculation and extraction are intertwined in the economic operations that take place across and around smart city projects.

The Smart Necropolis

New Town Kolkata, West Bengal, India, is a paradoxical space. The township was planned during the 1990s in the formerly agricultural area of Rajarhat, northeast of Kolkata, as a Special Economic Zone (SEZ) for the IT industry, with some residential and commercial developments attached. The West Bengal

government, then led by the Left Front, acquired land from farmers through a state-owned enterprise, the West Bengal Housing and Development Corporation (commonly referred to as WBHIDCO, or simply HIDCO). For Ishita Dey, Ranabir Samaddar, and Suhit K. Sen (2013), the process of land acquisition was infused with violence and left behind thousands of displaced households—a striking example of the repeating of primitive accumulation that characterizes postcolonial capitalism. Several IT companies, such as IBM, Accenture, Wipro, Infosys, and Tata Consulting Services, established branches in New Town, along with colleges, hospitals, gated communities, and shopping malls. Yet the township never really took off as either a global business hub or upscale residential area. Aggressively pursued, but not exactly successful, the zoning policy has left behind displaced farmers and destitute communities, without generating the promised results in terms of employment, development, and collective wealth.

In 2015, the Indian government, led by the nationalist-liberist Bharatiya Janata Party (BJP), launched the Smart City Mission (SCM), a significant funding program to support investments in urban digital infrastructures. When the New Town Kolkata Development Authority (NKDA) applied for SCM funding, the place was an inconsistent, wretched agglomeration of unfinished flyovers and luxury hotels, corporate enclaves and unsold condos, upscale shopping malls and scattered bustees. Dey and colleagues (2013) define New Town a necropolis, a dystopian space where the past—villages and agriculture—has been destroyed, while the future—of the hi-tech township first, then of the smart city—seems indefinitely suspended. Meanwhile, in the present, most corporate employees leave as soon as their working hours end. Local residents are split between those who live in slums and make a living in the informal sector and those who segregate themselves between gated communities and shopping malls.

Smart New Town is built around the Pan City Solution, an integrated system of Internet of Things (IoT) infrastructures managed via a single control room. In 2018, the West Bengal government has laid the first stone of the Bengal Silicon Valley, a vast development in New Town that aims to attract leading tech firms with discounted land and fiscal incentives. As the smart city seems to be a new strategy to make the failing urban experiment of New Town work at last, the digitalization of New Town is proceeding quite unevenly. Though IoT networks are being installed in selected zones of the township, large areas still lack basic services, and a large part of the population is unable to regularly access the Internet. Elsewhere, I have argued (Antenucci, 2019) that in contrast with the narratives offered by both government and corporate players, which promise the frictionless integration of infrastructures into a harmonic urban system, the digitalization of New Town is inherently implicated with bordering processes. The development of digital infrastructures incorporates and reworks the sociospatial borders between bustees and IT enclaves, middle-class residents, and the informal sector, which have shaped the township since its creation.

Smart city projects are explicitly defined as a strategy to appeal to major investors and finally position New Town among the global circuits of capital (“Smart City Proposal,” 2015). And albeit still on paper or in the initial stages, the processes of digitalization have already opened up new paths for capital operations in the township. Platforms like Uber have started business in New Town, targeting the young crowd of IT professionals that work and/or live there. The exchange between Uber and the NKDA reported at the beginning of this article makes clear that the platform presents itself, and is recognized, as a force of urban smartening. From this position, Uber negotiates investments and incentives with local authorities. At the same time, though, the platform deploys its private computing infrastructure, through which it extracts

data from users and the urban environment, and then value from data. Moreover, the new status of smart city seems to have reactivated older patterns of extraction. Investors, who had largely withdrawn from New Town in the wake of the 2008 financial crisis, scared by the lack of sales, have recently come back. As the price of land and properties has begun to rise again, real estate initiatives, largely connected to global financial circuits, have gained new momentum.

Extraction(s)

Smart cities are sites of intensive data mining, and in the age of what has been variously defined as digital/algorithmic/platform/surveillance capitalism, it is generally agreed that data are an immense source of value. Data extractivism, Morozov (2017) suggests, is the logic that drives the industry of digital technology, where users are “valuable stocks of data” that companies seek to drain. As Geoffrey Bowker (2005), Lisa Gitelman, and Virginia Jackson (2013) make clear, there is no such thing as “raw data.” Data do not just exist “out there,” but are always imagined as data in the first place, and generated (Manovich, 2001) through distinct media and practices. But even if it is not raw material, data still need to be extracted from bodies, objects, social interactions, or, for the purpose of this article, cities. Then, value needs to be extracted from data. Before becoming actionable, and therefore tradable and profitable, data are processed through specific algorithmic operations—sorting, scraping, cleaning up, clustering, modeling. It is through these operations that supposedly “raw” data are turned into commodities that can be monetized in various ways. Combining Marx with Bourdieu’s theory of cultural capital, Sadowski (2019) challenges the definitions of data as mere commodities or raw materials, and looks at data as capital. Similar to social and cultural capital, data capital is “distinct from, but has its roots in, economic capital” and “is convertible, in certain conditions, to economic capital” (p. 4). In this view, digital capitalism is driven by the imperative “to constantly collect and circulate data by producing commodities that create more data and building infrastructure to manage data” (p. 4).

If data extractivism is definitely a key domain of value extraction in smart cities, due to the concentration of data-mining infrastructures and platforms, it is not the only one, and more importantly, it is not independent of other sedimented processes. In other words, for data to be extracted, and for value to be extracted from data, other extractive processes must take place. In a fascinating recent study, Kate Crawford and Vladan Joler (2018) present the anatomical map of one of the most popular AI devices: Amazon Echo, also known as Alexa. Alexa’s anatomical map is made of human labor, data, and planetary resources. Building on the analysis of extractive operations developed by Sandro Mezzadra and Brett Neilson (2017), Crawford and Joler draw attention to the ways in which the capitalist predation of minerals and humans alike lies at the very core of the digital industry, at odds with the Silicon Valley imagery of friendly cooperation and clean design. Alexa’s anatomical map, I suggest, can be applied to the millions of smart devices and infrastructure that compose smart cities, to better grasp the complex processes of value extraction into which these are immersed. Keeping the broader picture of extraction in mind, it is also essential to pay attention to the specific modes of extraction through which platforms appropriate data and turn them into money. The notion of data colonialism proposed by Nick Couldry and Ulises Mejias (2018) keeps together the expansive geopolitical dimension dominated by the United States and China, alongside a few tech giants, in which resources and bodies are appropriated, and the intensive practices of mining data out of individuals and the population. Data relations, Couldry and Mejias argue, signal a reconfiguration

of life in modalities that are available for extraction. Platforms produce “a form of ‘social’ that is ready for appropriation and exploitation for value as data” (p. 4). As I will illustrate shortly, the making of smart New Town offers clear examples of the ways in which the urban environment is being reconfigured to enable the production and appropriation of data. Interestingly, also, smart city plans in New Town have grafted upon distinct colonial practices, such as land grabbing and dispossession, and intersected extant processes of enclosure, financialization, and speculation.

The notion of extractive urbanism has been proposed by Kirshner and Power (2015) to describe the ways in which the booming industry of coal extraction has dramatically affected urban spaces and processes of urbanization in the province of Tete, Mozambique. Here, the emphasis is on the spatial formations or transformations of enclaves, infrastructures, and new enclosures. Extractive urbanism has been also used in a broader, almost metaphorical sense, to describe strategies of urban development that reflect a “gold mine mentality” in their aim to maximize profit from the presence of students in some U.S. university cities (Foote, 2016). In parallel, the notion of urban extraction is found in the work of Gabriela Massuh (2014, pp. 55–60, as quoted in Gago & Mezzadra, 2017, p. 580) to address what she defines the “plunder” of Buenos Aires, where rent became one of the extractive instruments that have increasingly pushed low-income residents out of certain areas of the city. In Massuh’s work, clearly, the focus is on specific forms of extraction, such as property and financial rent, that take place in the urban context and reproduce the violence and predation of more literal extractive practices, to which they are also linked by the global circulation of capital. In this article, I suggest that the binomy of extractive urbanism/urban extractivism is useful to make sense of smart cities from an economic angle. I rely on these notions to frame and connect a range of different operations through which value is being extracted from the smart city in the making. The following pages will show how, if data extractivism is a newer and rampant form of capitalist operations, it has been anticipated and is accompanied by other operations, such as land grabbing and financialization.

Extraction Before Data: Land Grabbing and Financialization

Candor Techspace is a 45.40-acre campus in New Town Rajarhat, and it hosts multinational tech firms such as Accenture, Capgemini, Tata Consultancy Services, and Cognizant. One of the first IT Special Economic Zones (SEZs) established in Rajarhat, it sits on land that once belonged to the farmers of the nearby village of Chack Pachuria, which was forcibly acquired by the government in the early 2000s. As Dey and associates (2013) detail in their account of the making of New Town, the dispossessed owners of the land now support themselves by running food shops around the SEZ gates, ever under the threat of imminent displacement. Previously known as Infospace, the IT campus was developed by Indian firm Unitech, and opened for business in 2005. In 2014, Candor was acquired by global investment firm Brookfield, reportedly in a \$900 million deal (Srivastava, 2018), together with other IT parks in Gurugram and Noida. The acquisition was completed at an ideal time, soon after the newly elected government, led by Narendra Modi, announced the introduction of Real Estate Investment Trusts (REIT) in the country and just a few months before the launch of the Smart City Mission funding scheme. A major player in global finance, Brookfield manages a portfolio of more than US\$285 billion in assets, and according to market analysts, the group holds investments in India for more than \$5 billion in infrastructure, office parks, and private equity.

The story of Candor SEZ says much about the story of New Town Rajarhat. It lays out a path that begins with land grabbing, the imposition of new enclosures, and the dispossession of local communities, and leads to the speculative operations of global finance on the smart city to come. Various extractive dynamics—land grabbing and SEZs, financial ventures and real estate—have anticipated and prepared the smart city as well as the forms of valorization that come with it.

The creation of IT SEZs in Rajarhat precedes the smart city by about 10 years, but is still a key factor for urban development. The New Town Smart City Proposal strongly leverages the presence of tech hubs as an indicator of economic potential and technological advancement. Companies have been consulted as stakeholders in the planning of infrastructures and policies. Candor Techspace tenants Accenture and TCS, as well as other firms quartered in New Town such as Wipro, Intel, SAP, Oracle, and IBM, are getting contracts for the implementation, operations and maintenance of single components of the Pan City solution. The smart city might be still more narrative than reality, but a new wave of economic operations is already in motion in New Town. Here, it is important to remark the disjuncture between the actual advancement of smart projects and the forms in which they are already generating value. The notion of test bed (Halpern et al., 2013, 2015)—that is, of urban experiments, the result of which is still undetermined—is helpful in grasping how this disjuncture is not void but is actually teeming with initiatives and effects. The test bed, here, takes a paradoxical twist, where technological experiments are often marked by delays, interruptions, and failure. Yet those do not impede, but rather become the conditions for new strategies of what Foote (2016) describes as extractive urbanism: planning decisions and developments that seek to maximize the extraction of value from the city. A smart city that exists only in its speculative form, and has not fully materialized yet, becomes the terrain of speculative operations projected on the urban future and, at the same time, of extractive practices in the present. In practice, this means that while it is still unclear to what extent the projects for New Town will succeed in creating a smart city, they already creating value for the real estate market. At the same time, commercial platforms like Uber are not waiting for the smart city to materialize in its final form to extract data from the urban environment, and value from data. But I will return to this later in this article.

For now, let us look at the remaining plots of lands in New Town, which are in high demand and selling quickly; in 2017, there were more than 4,000 applicants for the 100 residential plots put up for sale by HIDCO ("HIDCO Starts Lottery," 2017). In August 2018, the West Bengal government laid the foundational stone for the Bengal Silicon Valley Hub. In the attempt to attract major tech companies, HIDCO—the government agency in charge of the project—has set a minimum average annual turnover of Indian Rupees (INR) 500 crore (about \$75 million) as a requirement to apply for land plots. In return, a 99-year lease at discounted prices as well as fiscal incentives are offered, including extra 15% floor area ratio for IT buildings and 50% exemption of property tax for 12 years (Housing Infrastructure Development Corporation, 2019). In addition, the government promises to support venture capital funds to promote tech entrepreneurship in the state. According to market analysts (Gupta, 2019), the project has quickly boosted residential real estate in New Town, where realtors are already competing in selling mortgages and capturing investment funds to complete new gated communities. Smart projects and designs in New Town have prompted strategies of extractive urbanism that bet on the smart city despite its uncertain realization, and are already generating value along a chain of land appropriation, financial instruments, ventures, and rent.

Data, Platforms, Cities

While real estate and financial ventures proliferate in New Town, driven by the smart city narratives and by the promise of government funding, capitalist platforms target the growing terrain of urban data. Uber started its operations in Kolkata in 2014. This platform has pioneered e-hailing services and opened up the field for competitors around the world, such as Lyft, Waze, Ola, and Taxify. Uber is an icon of the new, digitally mediated service business that Nick Srnicek (2016) critically analyzes through the category of platform capitalism. Platforms, Srnicek argues, are a new type of capitalist organization, structured around the computational intermediation of services between different groups of users—drivers and riders, in the case of Uber. At the core of these capitalist organizations are the computing infrastructures through which platforms extract and process data for various purposes—to control workers, improve algorithms, offer new services and products, or sell data to other companies. In this sense, Uber offers clear examples of the processes that Morozov (2017) defines as data extractivism. The platforms' operations are based on an incessant series of algorithmic speculations—ride demand, price surges, weather conditions, best routes, drivers' behaviors—which aim to extract the maximum possible value from all the elements involved. Michelangelo, Uber's machine learning platform, crunches petabytes of data from numerous different sources—users apps, GPS, cars, cameras, sensors, maps, business partners (such as Google, Facebook, and Spotify), weather forecast, news, financial institutions—to generate models for car dispatching, dynamic pricing, anomaly detection, extreme event forecasting, and other business operations.

In establishing its market in Kolkata, Uber faced some challenges. Competition with traditional taxis and autos was quite strong, especially in the beginning. Also, taking hold of customers and urban habits was not always smooth for the platform. For example, the frequent absence of street names and civic numbers in the city would require some form of communication between the driver and the rider beyond the app geolocator. In addition to this, the obligation to pay online via credit card was so much at odds with the common habit to negotiate and pay cash for taxi rides, that eventually the company allowed Indian drivers to accept cash. Nevertheless, as reported in the letter written by Uber India to the government of West Bengal, the company was attracted enough by the smart city project to invest INR 50 crores (about \$7 million) and create 40,000 jobs (i.e., driver partners) in the state ("Smart City Proposal," 2015, p. 100). The smart city projects were still far from completion, but Uber seized the opportunities provided by a favorable conjuncture of different elements—a market of digitally educated customers in the young IT professionals who live in, or commute to, the township; the absence of public transport; a large pool of informal workers looking for better jobs; and a friendly policy framework.

Capitalist platforms have powerful material effects not only on their users—drivers and riders in the case of Uber—but on the urban environment as well. By leveraging data, in 10 years Uber has become a powerhouse capable to affect, and in many ways transform, urban life. The platform has the power to reshape patterns of urban circulation, to incite mobility (at least for those who own a smartphone and a credit card), and to connect areas of the city that were previously hardly accessible. In New Town, a huge, sprawling area with insufficient public transport, where shops, restaurants, and bars are for the most part concentrated inside hotels and shopping malls, Uber ensures "last mile connectivity" and opportunities for social life and consumption to residents. It also allows nonresidents to stay in or travel to New Town beyond office hours. Typically, the availability of transport options is one of the key factors to determine the

marketability of urban properties. As Uber makes it easier to reach and travel around in New Town, the value of both commercial and residential properties in the area is likely to increase. In essence, beyond their specific operations, platforms can play a role in broader processes of urban transformation, such as real estate market and trends of consumption. This suggests, again, that data extractivism should always be framed in its relations with processes of resource extraction, financialization, exploitation of labor, and the sociospatial transformation of the environment—cities included.

Platforms and Their Discontent

In February 2017, Uber drivers in Kolkata went on an impromptu strike, putting their apps off-line and blocking the streets. Uber had just cut the considerable incentives that had been offered to drivers daily until then. This was the first of several protests in which the drivers accused the company of continuously reducing their income. In 2018, in the face of a surge in fuel prices, Uber cut off minimum fares for passengers while increasing the fees that drivers had to pay to the platform. Some drivers had their account suddenly blocked. Company officials explained this was due to negative feedback as well as “in-built processes” of the platform that identified drivers’ profiles “not suited to provide the best service” (Chakraborti & Ghosh, 2018, para. 4).

For Srnicek (2016), Uber is a relevant example of a “lean” platform—a business organization that minimizes fixed costs of workforce and infrastructures and maximizes the outsourcing of labor and fixed capital, while retaining control of the software that enables transaction between workers and customers, as well as of the multiple types of data extracted—traffic, clients habits, route patterns, car performances, and more. Importantly, Srnicek observes, lean platforms base their revenue strategies on large pools of surplus labor, whereby unemployed or precarious workers, presented and formally registered as independent contractors, are actually forced into self-employment, working for low wages and without any protection or benefit. The conditions exposed by Uber drivers in Kolkata strongly confirm this analysis. Their complaints are, however, strikingly at odds with the discourses that Uber has mobilized in its marketing strategy, and that drivers and customers seemed to absorb, at least in the early stage. When it started business in Kolkata, Uber recruited a pool of driving partners by aggressively campaigning on a narrative of individual empowerment and upward mobility. The idea of an entrepreneurial way out of poverty was not new in the context, as microfinance institutions have been in business in Kolkata, as in many areas of Southeast Asia, since the early 2000s (Roy, 2010). However, this approach had long coexisted with sedimented strategies of poverty management ministered through governmental agencies, networks of patronage linked to political parties, and by a large NGO industry. But since the BJP came to power in 2014 with a strong pro-market agenda, discourses and programs to promote individual entrepreneurship—such as the Startup India funding scheme—have gained more momentum. The marketing strategies deployed by Uber focused on the promise of an attractive, reliable source of income that could lift drivers out of poverty and of the informal sector, enabling them to pursue their own ambitions, such as starting a family or paying for higher education. Potential drivers were also prospected a social upgrade to the middle class and to the status of entrepreneur, symbolized by self-management and the ownership of a car. The stories of successful drivers featured on the company’s blog (Uber, 2016) depict joining the platform as a game changer that allowed individuals to unlock their self-entrepreneurial potential and begin to climb up the socioeconomic ladder through their unique skills and hard work. As Noopur Raval (2019) notes, many workers in the Indian

informal sector have found working with and through platforms appealing, as these jobs looked “cleaner” and “more dignified” than their previous working conditions.

Marketing strategies notwithstanding, Uber had to fabricate its own labor supply in a context where the conditions for the so-called “sharing” or “gig” economy largely do not exist. In cities in the United States or in Europe, Uber can rely on a segment of people who already own a car and are willing to mobilize this asset for money. In Kolkata, however, Uber has integrated existing circuits of informal economies where cars are hardly idle assets, and potential drivers must be put in a condition to drive in the first place. The drivers that I met in India, for example, came from low-skill, low-wage and unregulated jobs such as cooking in street food stalls or driving trucks. Among its efforts to “bring entrepreneurship to the Indian grassroots” (Uber, 2014) and to include individual entrepreneurs into the formal workforce and into formal financial circuits (Uber, 2016), Uber partnered with several Indian lending companies, as well as with Tata Motors, to launch financing scheme that would enable drivers to buy their own car. Hoping for a quick improvement of their working and living conditions, drivers took up loans, either through Uber’s financial schemes or through informal networks.

The contrast between the marketing campaigns and the real working conditions became explosive at some point. As Raval (2019) observes, forms of “granular surveillance” that aim to track worker’s movement, rest times, and performances are “a commonplace” in platform work (p. 35). Besides surveillance, the promise of socioeconomic uplifting was quickly disproved. Kolkata drivers lament working 24-hour shifts but still struggling to make a living and being trapped with loans they cannot repay. They have come to collectively identify Uber as an exploiting force and the self-employment narrative as a trap. In the protests, drivers were clearly trying to humanize and personify their counterpart in every possible way: by addressing their bosses— unresponsive—or marching to the company offices—closed. Not a surprise, as in Uber, notoriously, there are no bosses and no offices. In fact, drivers were fighting against decisions and procedures that were far beyond labor negotiations in the traditional sense; their boss(es) is (are) the algorithm(s). These algorithms perform functions of tracking, ranking, profiling, and anticipating. According to Uber official sources, which are generous in detailing their technological developments, the machine learning procedures that connect riders and drivers calculate several factors, including driver rating, customer rating, destination, expected surge pricing, and traffic, in the attempt to optimize the service for both parties. For the Kolkatan drivers, however, the formulas and strings of code responsible for their long working hours and poor income remain obscure and inaccessible. In their ethnographic work on Uber drivers, Alex Rosenblat and Luke Stark (2016) draw attention to the asymmetric power relations that structure work in the platform, where drivers are subject to intensive forms of algorithmic management enforced through surveillance and performance rating. As Luke Munn (2018) suggests, Uber algorithms are forces of labor control, which actively seek to monitor, profile, discipline, manipulate, discriminate, and punish workers. Andrea Pollio (2019) notes how drivers activate multiple strategies to “trick” the platform and increase their revenues, in the attempt to reverse the asymmetry of power.

The algorithmic techniques through which Uber seeks to draw out as much data as possible from drivers, riders, and the urban environment; and as much value as possible from that data, point to another facet of urban extractivism. As we have seen, Uber presents itself, and is regarded, as a key player of smart urbanization. It negotiates investments and conditions with municipal institutions and, leveraging its

enormous data sets and powerful analytics, offers to assist with urban planning. It shapes the patterns of mobility and affects the value of property. Uber's computing infrastructures are designed to maximize the capture of information about both users and the urban environment. As John Stehlin (2018) puts it, cities are "the theater of platform capitalism," (para. 1) where all the components of these economic formations—producers and consumers of digital products, capital, workforce and infrastructure—concentrate. What ultimately defines the relationship between platform and the urban is, for Stehlin, that they share a logic of rent. By providing a digital intermediation of locally available services, such as car rides, platforms operate as infrastructure of rent extraction and capture what Stehlin calls "place-based value." In doing so, Stehlin argues, platforms show tendencies that are similar to long-standing processes of rent extraction linked to real estate operations in the urban economies. Yet rent, albeit crucial, does not exhaust the definition of urban extractivism. The extraction of rent through platforms is intimately linked to, and enabled by, a range of other extractive practices. Ugo Rossi (2017) observes that platforms "are interested in exploiting the commonwealth of metropolitan environments (in terms of codified and socially diffused knowledge, entrepreneurial life forms and relational abilities)" (p. 1429). This is clear, for example, in the strategies that control and maximize the extraction of time and energy from the bodies of the workers, as seen in the interactions between Uber drivers and their algorithmic supervisors. At the same time, platforms create and maintain their products by appropriating the free labor provided by users—for example, the creation of content such as ratings and reviews or training machine learning (ML) applications. Besides, the continuously fine-tuned predictive analytics that adjust fares and match rides seek to monetize both personal and environmental data (i.e., weather conditions, public events, users and drivers rating, traffic, etc.) to the furthest extent.

Between Speculation and Extraction

Uber operations, as it is the case with many other "unicorns" and platforms, are also considerably driven by financial logics. Uber raised nearly US\$25 billion in 23 funding rounds over nine years before going public in May 2019. Among its funders are prominent venture capital and private equity firms such as Lowercase, First Round, Benchmark, and GV (owned by Alphabet); global investment banks such as Goldman Sachs, Morgan Stanley and SoftBank; automotive colossus such as Tata Motors and Toyota; and the Saudi Arabia's Public Investment Fund. Such massive injections of capital come with considerable strings attached—that is, the repayment of loans and the maximization of future exits for investors. Companies are "helped," that is to say, compelled, to grow fast. Streams of cash have kept Uber running at losses for years, while striving to dominate the market. The costs of this crusade for monopoly are largely born by workers. To reconcile relentless expansion and lack of profitability, platforms cut costs in the attempt to reduce losses (Srnicek, 2016). Part of these strategies consists in cropping workers' wages and squeezing as much value as possible out of them through algorithmic forms of discipline and control. At the time of the strikes of Kolkata drivers, Uber was preparing for its Initial Public Offering (IPO), set for May 2019, that experts expected to be the largest in history.² Despite its global expansion and tremendous estimated value, the company has not generated revenues yet. This has been presented by the corporate management as a specific market strategy, aimed at achieving a hegemonic position in the market. Yet investors probably had

² Uber's debut on the stock market was then considered a failure, as the share price dropped significantly after the IPO, and the company reported continued losses of billions during the following months.

an interest in minimizing losses in view of the imminent IPO, and might have pushed the company to adjust its business model and reduce costs. This would explain the abrupt cut in drivers' wages. In other words, behind the algorithmic boss and the loss of revenue for drivers might be the command of finance, and the massive speculative operations that have supported the growth of Uber so far. Here, we can see how trajectories of global speculation on the platform economy reverberate onto the working conditions of Kolkata drivers, and on the development of the New Town smart city.

Financial circuits—venture capital, equity, investment banks—have been playing a key role in the development of New Town since the beginning. Studies (e.g., Fainstein, 2016; Halbert & Attuyer, 2016; Weber, 2010) document how various financial instruments and relations increasingly affect urban production—that is, “the design, construction, exploitation and ownership of the urban built environment” (Halbert & Attuyer, 2016, p. 1)—triggering, and feeding on, enclosing and expulsion processes. The incomplete construction sites, empty buildings, abandoned land plots and slums of Rajarhat are sobering manifestations of these dynamics. The real estate initiatives and the SEZs of the early 2000s have never fulfilled their promise of creating a leading IT hub, an exclusive residential suburb, or “a new Singapore.” Instead, the township has moved on from speculation to speculation—the smart city and the Bengal Silicon Valley being the latest ones—in the attempt to amend previous failures. New investors buy the debts of older ones, while banks and equity funds step in every time to fuel the chain of loans, rate interests, and derivatives. On the other side of this chain remains the destruction of a livelihood for thousands of local households, and masses of dispossessed people who struggle to make a living in the informal sector.

In this article, I have highlighted several processes of value extraction that are intertwined with the making of smart cities at different levels, from land grabbing and real estate developments to data mining and algorithmic modeling. I have also stressed the multiple meanings of extraction to highlight how the new economic strategies that are taking hold of smart cities (such as data extractivism and platform capitalism) are inseparable from older, planetary networks of extraction. These extractive dynamics, however, are taking place in a speculative framework. In New Town, it is not the final accomplishment of a fully formed smart city that generates new streams of value, but rather the continuous work in progress, the experiments and the announcements. Between the promise of the future smart city, and the actual progress of infrastructures and developments there is a disjuncture, in which speculative operations and extractive practices take place at the same time. Lisa Adkins (2018) argues that speculation is no longer restricted to the financial sector, but as has become, at once, a mode of capitalist accumulation and a system of social organization. As financial instruments increasingly shape the everyday life of individuals and households, in Adkins' view, speculation emerges as the logic that organizes knowledge, time, and decisions through the imperatives of debt and repayment. Though Adkins does not examine cities or urban strategies in her analysis, the idea of speculation as a force that pervasively structures everyday life and social practices can be productively (and provocatively) employed to make sense of the dynamics that are at work in the making of smart cities. As a test bed, the making of smart New Town consists of provisional configurations of materials, logics, and strategies, which are open to multiple outcomes and effects and which are in a state of continuous update. These have performative effects across unstable temporalities, where the boundaries between present and future, facts and projections are always blurred. The smart city is indeed shaped by a speculative rationality that manifests itself in multiple forms—from the narratives and

plans promising an urban paradise that might never materialize, to the financial operations behind real estate and platforms.

However, Adkins (2018) explicitly plays the logic of speculation against extraction. She sees extraction as primarily connected to human labor and production, and argues that as surplus is increasingly generated through flows of money, rather than from laboring bodies, the whole category of extraction is completely subsumed into the paradigm of speculation. Drawing on the various extractive dynamics that can be charted in the making of smart cities—which include, but are not limited to, human labor—I suggest, instead, that speculation and extraction coexist and feed each other in contingent, nonlinear relations. If extractive practices, powered by financial ventures and data mining, are inscribed into a broader horizon of speculation, then speculative operations are continuously fueled by the maximization of extraction from the urban environment. The examples from New Town, from real estate projects to platforms operations, indicate a condition in which speculation and extraction coexist, overlapping and feeding each other by continually stretching the boundaries of present and future. If speculation organizes and shapes the future, while also appropriating the present, then extraction drills down (literally and metaphorically) in the present, while fueling new appropriations of the future.

As Mezzadra and Neilson (2017) observe, finance pervasively organizes and shapes the multiple chains of extraction within contemporary capitalism, through debt and other financial products. The command over the future and the promise of future production, which characterizes financial speculation (p. 199, drawing on Marx, 1991, pp. 599–641), drive extractive operations from the earth as well as from social life. For Adkins (2018), the command exerted by speculation has not production as its object, but the incessant activation and maximization of the flows of money that come from a range of forms of debts, and which blur the boundaries between future and present. This can be observed, in New Town, across the chain of financial operations that have supported real estate investments, which bet on the smart city to come, while trying to maximize the extraction of value, in the form of rent or sale. Besides, as far as capitalist platforms are concerned, command over the future and the present is not only the imperative of finance, but also the telos of the algorithmic machines that materially organize labor, logistics, information, and entertainment. Speculation in and on the smart city generates value from the movement of money and, more broadly, across the platforms that pervade the urban environment, as well as through the extensive modeling of future possibilities of extraction. Simultaneously, extraction fuels the machinery of capital, as it continually supplies data, money (literal or virtual), and work.

Conclusions

In New Town, the making of a smart city looks like the last act of a three-decade process that Dey and colleagues (2013) have described as primitive accumulation, conducted through land grabbing and the systematic dispossession of the local residents. In a postcolonial context where different regimes of time and economy are copresent, highly financialized smart developments and real estate speculation—as in the Bengal Silicon Valley—have engrafted on SEZs imposed on farmlands, while large parts of the local population survive in bustees and through informal economic networks.

When a global commercial platform like Uber made its way into the Kolkata market, it appropriated and reworked situated narratives—namely, the dream of individual success and social uplifting. As the platform sourced labor force from the pools of informal economy, it also fabricated the conditions for this workforce to fit into its business model. Drivers who did not own a vehicle as an idle asset as per the principles of the sharing economy, have been pushed into circuits of financialization and debt to buy cars they could then “share.”

At the same time, capitalist platforms like Uber deploy an ever-growing range of computing infrastructures to maximize their profits from every bit of their operations—from logistics and labor control, to customer profiling and tailored advertising. Predictive analytics and modeling have also effects on the urban environment, insofar as they are able to drive the movements of people and money.

The specular concepts of urban extractivism (Gago & Mezzadra, 2017; Massuh, 2014) and extractive urbanism (Foote, 2016; Kirshner & Power, 2015), capture the range of operations through which value is extracted in and from a smart city in the making. Data extractivism is definitely a central process in smart cities, but examples from New Town have shown how urban mining and the monetization of data can only take place when specific material and social conditions are created, that precede and march along digitalization—enclosures, displacement, and dispossession, and the penetration of financial capital. At the same time, the economic processes at work in the making of the smart city take place in the interplay of extraction and speculation. The smart city projects of New Town can be seen as a paradoxical test bed, driven by a speculative logic, where the disjuncture between the actual urban conditions and the narratives and promises of the future city become the terrain for real estate and financial ventures, and for the operations of capitalist platforms.

References

- Adkins, L. (2018). *The time of money*. Stanford, CA: Stanford University Press.
- Antenucci, I. (2019). The making of urban computing environments: Borders, security and governance. *Synoptique: An Online Journal of Film and Moving Image Studies*, 8(1), 54–64. Retrieved from <https://synoptique.ca/wp-content/uploads/2019/03/8.1-Antenucci.pdf>
- Bowker, G. C. (2005). *Memory practices in the sciences*. Cambridge, MA: MIT Press.
- Chakraborti, S., & Ghosh, D. (2018, October 31). App cab drivers call 2-day strike against firm’s “excess.” *Times of India*. Retrieved from <https://timesofindia.indiatimes.com/city/kolkata/app-cab-drivers-call-2-day-strike-against-firms-excess/articleshow/66438357.cms>
- Couldry, N., & Mejias, U. A. (2018). Data colonialism: Rethinking big data’s relation to the contemporary subject. *Television & New Media*, 20(4), 336–349.

- Crawford, K., & Joler, V. (2018). Anatomy of an AI system: The Amazon Echo as an anatomical map of human labor, data and planetary resources. Retrieved from <https://anatomyof.ai/>
- Datta, A. (2018). The digital turn in postcolonial urbanism: Smart citizenship in the making of India's 100 smart cities. *Transactions of the Institute of British Geographers*, 43(3), 405–419.
- Dey, I., Samaddar, R., & Sen, S. K. (2013). *Beyond Kolkata: Rajarhat and the dystopia of urban imagination*. Delhi, India: Routledge.
- Fainstein, S. (2016). Financialisation and justice in the city: A commentary. *Urban Studies*, 53(7), 1503–1508.
- Foot, N. S. (2016). *Tapping the new gold mines: Extractive urbanism and neighborhood change in the University City* (Unpublished doctoral dissertation). The University of Texas at San Antonio.
- Gago, V., & Mezzadra, S. (2017). A critique of the extractive operations of capital: Toward an expanded concept of extractivism. *Rethinking Marxism*, 29(4), 574–591.
- Gitelman, L., & Jackson, V. (2013). Introduction. In L. Gitelman (Ed.), "Raw data" is an oxymoron (pp. 1–15). Cambridge, MA: MIT Press.
- Gupta, S. (2019, January 20). After Silicon Valley, shipping ministry plans CEZ in Bengal. Retrieved from <https://www.proptiger.com/guide/post/silicon-valley-project-will-be-a-gamechanger-for-kolkatas-real-estate>
- Halbert, L., & Attuyer, K. (2016). Introduction. The financialisation of urban production: Conditions, mediations and transformations. *Urban Studies*, 53(7), 1347–1361.
- Halpern, O., LeCavalier, J., Calvillo, N., & Pietsch, W. (2013). Test-bed urbanism. *Public Culture*, 25(2), 272–306.
- Halpern, O., LeCavalier, J., Calvillo, N., & Pietsch, W. (2015). Test-bed as urban epistemology. In S. Marvin, A. Luque-Alaya, & C. McFarlane (Eds.), *Smart urbanism: Utopian vision or false dawn?* (pp. 146–168). London, UK: Routledge.
- HIDCO starts lottery for plots. (2017, June 20). *Millennium Post*. Retrieved from <http://www.millenniumpost.in/kolkata/kolkata-248292>
- Housing Infrastructure Development Corporation. (2019, January 25). Expression of interest for Bengal Silicon Valley New Town. Retrieved from https://www.wbhidcoltd.com/uploads/tender/Tender_2269.PDF
- Kirshner, J., & Power, M. (2015). Mining and extractive urbanism: Postdevelopment in a Mozambican boomtown. *Geoforum*, 61, 67–78.

- Manovich, L. (2001). *The language of new media*. Cambridge, MA: MIT Press.
- Marx, K. (1991). *Capital*, 3 (D. Fernbach. Trans). London, UK: Penguin.
- Massuh, G. (2014). El robo de Buenos Aires: La trama de corrupción, ineficiencia y negocios que le arrebató la ciudad [The plunder of Buenos Aires: The weave of corruption, inefficiencies and business that stole the city]. Buenos Aires, Argentina: Sudamericana.
- Mertia, S. (2017). Socio-technical imaginaries of a data-driven city—Ethnographic vignettes from Delhi. *The Fibreculture Journal*, 29. Retrieved from <http://fibreculturejournal.org/wp-content/pdfs/FCJ-217SandeepMertia.pdf>. doi:10.15307/fcj.29.217.2017
- Mezzadra, S., & Neilson, B. (2017). On the multiple frontiers of extraction: Excavating contemporary capitalism. *Cultural Studies*, 31(2-3), 185–204.
- Morozov, E. (2017). Digital intermediation of everything: At the intersection of politics, technology and finance. Retrieved from <https://rm.coe.int/digital-intermediation-of-everything-at-the-intersection-of-politics-t/168075baba>
- Munn, L. (2018). *Ferocious logics: Unmaking the algorithm*. Lüneburg, Germany: Meson.
- Pollio, A. (2019). Forefronts of the sharing economy: Uber in Cape Town. *International Journal of Urban and Regional Research*, 43(4), 760–775.
- Raval, N. (2019). Automating informality: On AI and labour in the Global South. Retrieved from https://giswatch.org/sites/default/files/gisw2019_web_th5.pdf
- Rosenblat, A., & Stark, L. (2016). Algorithmic labor and information asymmetries: A case study of Uber's drivers. *International Journal of Communication*, 10, 3758–3784. doi:1932–8036/20160005
- Rossi, U. (2017). *Cities in global capitalism*. Cambridge, UK: Polity.
- Roy, A. (2010). *Poverty capital: Microfinance and the making of development*. New York, NY: Routledge.
- Sadowski, J. (2019). When data is capital: Datafication, accumulation, and extraction. *Big Data & Society*, 6(1), 1-12. doi:10.1177/2053951718820549
- Smart City Proposal. (2015). Retrieved from https://www.nkdamar.org/File/WB-01-KOL_SCP%20New%20Town%20Kolkata.pdf
- Srnicek, N. (2016). *Platform capitalism*. Cambridge, UK: Polity.

- Srivastava, S. (2018, April 3). Brookfield is reaping the rewards of its patiently deployed capital. *Forbes India*. Retrieved from <http://www.forbesindia.com/article/real-estate-special-2018/brookfield-is-reaping-the-rewards-of-its-patiently-deployed-capital/49841/1>
- Stehlin, J. (2018). Urban platforms, rent, and the digital built environment. *Mediapolis: A Journal of Cities and Culture*, 3(4). Retrieved from <https://www.mediapolisjournal.com/2018/10/urban-platforms-rent-and-the-digital-built-environment/>
- Uber. (2014, November 10). Uber vehicle financing: Bringing entrepreneurship to the Indian [Blog post]. Retrieved from <https://www.uber.com/en-IN/blog/uber-vehicle-financing-bringing-entrepreneurship-to-the-indian-grassroots/>
- Uber. (2016, June 30). Enabling entrepreneurship [Blog post]. Retrieved from <https://www.uber.com/en-IN/blog/enabling-entrepreneurship/>
- Weber, R. (2010). Selling city futures: The financialization of urban redevelopment policy. *Economic Geography*, 86(3), 251–274.