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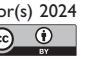

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Fintech 'frontiers' and the platformed motorcycle: Emergent infrastructures of value creation in African cities

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Abstract

Concerned with financialized extraction, the exploitation of precarious workers and racialized violence, critical scholars call for greater attention to the coloniality of financial technology (fintech) expansion in Africa. In this article, we echo the utility in foregrounding coloniality, but argue that it should be read as one among multiple, specific, and entangled ways in which fintech is creating new forms of value in the context of Africa's urbanization. To make this case, we focus on the nexus between platforms, motorcycle taxis and fintech. In three different African cities, we observe how fintech maps onto the impulses and desires of the private sector and the state alike to use fintech to enact various forms of value creation. In Nairobi, the motorcycle has become

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the testbed of assetization experiments that seek to create data-rich and less fuel-dependent economies; in Kigali, the state-led and platform-enabled standardization of motorcycle services intends to create fiscal, planning, and regulatory values; and in Cape Town, legacy supermarket chains enroll motorcycles and fintech offerings to algorithmically integrate urban economies of labor and retail. Tracing these processes illuminates the different rationalities, ingenuities, and technological entanglements that, beyond the endurance of coloniality, shape Africa's fintech moment.

Keywords
Platforms, African cities, financial technologies, infrastructure, coloniality

Introduction

It is "Fintech's moment in Africa", reads the headline of a 2022 McKinsey blog.[1] At the risk of ascribing meaning to what might be the harmless punctuation of the global consulting firm's media team, such a title infers what many so-called development experts seem to believe—that the global fintech explosion has taken a detour to the African continent. Growing Internet penetration, coupled with relatively low diffusion of legacy banking systems, promises to unleash staggering revenues for digitally enabled financial services. The word fintech, a portmanteau of "financial" and "technology", captures precisely this: innovations in the delivery and outreach of traditional financial services, such as credit and insurance, as well as entirely new products such as mobile money and cryptocurrencies. It is already the case that most high-risk investments in Africa are absorbed by financial startups (Partech Partners, 2022). Building on the financial inclusion agenda that development institutions have embraced for more than a decade (Gabor and Brooks, 2017), governments have also taken notice of the potential of fintech, launching initiatives that have ranged from the digitization of welfare payments (Breckenridge, 2014) to housing microfinance (Scheba, 2023) and the establishment of state-sanctioned digital currencies (like Nigeria's e-Naira). A ballooning of fintech pilots is addressing every aspect of life on the continent, especially in the large cities where these investments are concentrated (Pollio and Cirolia, 2022).

To make sense of this moment, a growing body of scholarship highlights the importance of understanding fintech as an infrastructure (Bernards and Campbell-Verduyn, 2019; Cirolia et al., 2022; Hall et al., 2023; Mann and Iazzolino, 2019). Arguably, fintech depends on material and technological systems (cables, data centers, satellites, mobile phones) and is characterized by the same processes of standardization, regulation, and qualification that inform other infrastructural sectors, such as water or energy (Bowker and Star, 2000). This fintech-as-infrastructure orientation builds both on the work of science and technology studies (STS) scholars (Furlong, 2014; Star, 1999), who usefully expand the ontological boundaries of infrastructure and technology, as well as the work of geography scholars, such as Peck and Whiteside (2016) and Hall et al. (2023), who stress the importance of seeing finance as part of infrastructural development (e.g., through investment) but also as an infrastructure itself, fundamental to the reproduction of material, social, political, and ecological worlds.

One of the offerings of this infrastructure lens is that it enables a critique of fintech in conversation with an existing body of work foregrounding the "coloniality of infrastructure" in Africa (Cupers, 2021). Historical, anthropological, and geographical analyses

of the extractive nature of finance and technology have thus been woven into a critique of infrastructural coloniality (e.g., Bernards, 2022; Langley and Leyshon, 2022; Rodima-Taylor, 2022), which in turn builds on a rich vocabulary developed for other infrastructure systems, such as railways, highways, and pipelines. Concepts such as "imperial invitations" (Kimari and Ernstson, 2020), "colonial moorings" (Enns and Bersaglio, 2020) or "colonial encounters" (Parashar and Schulz, 2021) have allowed for the exploration of the continuities and persistence which appear—in sometimes unexpected ways—in the contemporary financial turn of African capitalism (Ouma, 2020).

Overall, as we detail later, the burgeoning of fintech in Africa has been interpreted by a cohort of critical infrastructure scholars within the reproduction of colonial and neocolonial logics. This body of work has offered a useful corrective to dehistoricized readings of financialization (Alami and Guermond, 2023), attending to the evident anemia and critical erasure of questions of race, colonization, and violence (Haag, 2022; Levenson and Paret, 2022; Migozzi, 2020). It has further enriched our understanding of financial frontiers as a conceptual orientation that "pairs theft and dispossession with the excesses of accumulation, [while holding] together exhausted worlds and new hopes for autonomy and even freedom" (Ballestero et al., 2023: 311). This infrastructural perspective dovetails with debates over "data colonialism", an "emerging order" that, through digitally mediated relations, renders human life a terrain of profit extraction, replicating the same expansionary logics and patterns of western imperialism (Couldry and Mejias, 2019: xviii).

In this article, we argue that charting the colonial roots and logics of emerging fintech configurations is vital, yet insufficient to unpack the mechanisms and processes that substantiate them. In part, this argument builds on a refusal to accept linear and technodeterminist readings of emerging technologies—readings that place Africa as a late receiver of innovation from elsewhere (Mavhunga, 2017). We concur with Elyachar (2023), who argues that critical studies of financialization at large tend to imagine a western-centric "'mobile frontier'[,] remaking the world in its image" (p.2). These readings problematically "brush off" (Cooper, 2005) all forms of creation, imagination, resistance, and refusal that escape imperial and reactive relationships of power. Further, as Neferti Tadiar (2022) notes, coloniality as an analytic may well be a colonial gaze in itself, if it reproduces the notion that what happens in the postcolonial world is predominantly the result of colonial relations—"the West's own doing". Such diverse scholarship, often inexplicitly, has ample overlaps with the Southern urban orientation we deploy in our methods.

These reflections on the utility and limits of infrastructural coloniality can usefully engage the multiplicities and entanglements that substantiate contemporary fintech, particularly in the context of African cities. We thus align with Goldman (2023), who calls for empirical and methodological attention to fintech's "relentless dynamism and inter-scalar hypermobility of finance capital working across the postcolonial map" (p. 367). This dynamism, according to Janet Roitman's suggestion (2023), can usefully be articulated by observing the different forms of *value creation*, rather than just *extraction*, that are enacted by new fintech configurations and the diverse calculative rationalities that underpin them.[2] Instead of settling on a specific conception of "value", definitions of which remain elusive and diverging even in mainstream economics (Mazzucato, 2018), the notion of value creation centers the multiple "vernaculars", as Fabian Muniesa explains, through which the moral horizons of finance and innovation are imagined and orchestrated (2017). In other words, value creation is not limited to financial value (e.g., for shareholders or investors), but extends to creative, and necessarily virtuous, gains in social, political, and ecological domains. Of course, as Elyachar (2023) expertly demonstrates, addressing such questions of value creation is not banal, as "[r]evaluation and deleveraging is always a dramatic affair" (p.11).

The concept of value creation pushes us beyond a discourse of fintech's colonial exploitation, rent-seeking, and extraction, to look at diverse, relational, and multiple accounts of the entangled dynamics of economic and financial activities on the one hand, and social and cultural life on the other (Zelizer, 2012). We do not suggest that colonial processes are absent, but rather argue for an orientation towards fintech infrastructures that foreground multiplicities, aiming to show that values (and indeed risks) produced in the fintech space are circulated, refracted, distributed, and contested (Cirolia et al., 2022). This engagement with the multiplicities of value creation also mirrors our commitment to Southern urban theory and the "placing" of concepts and vocabularies (Bhan, 2019).

Following these insights, we ground our work in a unique (and arguably Southern) urban economy that has been transformed by fintech and digital platforms: that of motorcycle taxis. Common in cities across Africa (Kumar, 2011), motorcycles are a lifeline for the movement of people, goods, and even animals. Like other informal infrastructures of transportation, as Mutongi (2017) has shown in her work on minibus networks in Kenya, motorcycle taxis can themselves be read both as a result of colonial planning, and as an inventive refusal to accept the structural conditions and endurance of coloniality. Today, with the rise of information and communications technology (ICT) infrastructure, motorcycle taxis are increasingly being integrated into digital platforms (Cirolia et al., 2023; Nowak, 2023). In this article, specifically, we focus on the fintech innovations that have facilitated and been enabled by the "platformization" (Poell et al., 2019; Steinberg, 2020; Zhang, 2020) of riders in Nairobi (Kenya), Kigali (Rwanda), and Cape Town (South Africa), where an ongoing burst of digital services targets largely last-mile logistics and, to a lesser extent, e-hailing.[3] In a study conducted in 2021 in Kigali and Nairobi—and extended in 2022 to include Cape Town, the authors found that each city had between 20 and 25 platforms that specifically make use of motorcycle taxis for all manner of on-demand activities, from passenger service (e.g., UberBoda or YegoMoto) to specialized e-commerce platforms (e.g., those used for medicine, building materials, or food delivery) (Cirolia et al., 2023).

The article's sections are structured as follows: first, we outline our methodological approach, foregrounding our orientation to the study of fintech and infrastructure in African cities. We then turn to the conceptual framework for this piece, exploring the key ideas which have shaped our thinking and analytical lens. We reflect on the structural "duress" (Stoler, 2016) of colonial fragmentations (e.g., how value is ascribed along expected historical lines), while considering the different rationalities and ingenuities that shape "Africa's fintech moment". After providing this scaffold, we offer a description of three empirical processes of fintech innovations in African cities: "assetization" (in Nairobi), "standardization" (in Kigali), and "reintegration" (in Cape Town). These innovations map onto the impulses and desires of the private sector and the state alike to use fintech to enact various forms of value. As we discuss in the closing section, these dynamic, technological moments are also framed as—and indeed might contribute to—overcoming structural legacies and dependencies, from subordination in favor of foreign currencies, to the spatial inequalities inherited from colonial planning. In doing so, we avoid pitting analyses of the present against those which attend to the past—instead considering the multiple and nonlinear constructions and experiences which come to shape fintech in African cities today.

On methods: A Southern orientation to fintech

There are many ways to chart stories that, while acknowledging the coloniality of fintech, also foreground the forms of inventive "value creation" (Roitman, 2023) that complicate linear readings of finance and technology. In our case, as urban scholars, our

methodological approach builds on the scholarly project of Southern Urbanism and the concomitant need for new vocabularies (Bhan, 2019). As method, we are specifically inspired by the possibility of "re-describing" (Simone and Pieterse, 2017) urban life, not as an endless rediscovering of the differentiated processes of neoliberal capitalism (as work on fintech in Africa often does), but through "speculative alternatives that can animate and stitch together a plethora of diverse and divergent molecular experiments" (Simone and Pieterse, 2017: 56).

Southern Urbanism, as an orientation and method, begins with the assertion that, if place matters, processes are concurrent and messy, and experiences are connected, then different geographies offer us diverse ways of theorizing urban life and economies. Such orientation does not intend to ignore structural logics or generalizable insights, but diverts attention toward mid-range, place-based theorization, avoiding both infinite particularism and crude universalization. In doing so, it foregrounds relationships and avoids binaries (e.g., between the local and the global), attending to world-making processes that originate in unexpected quarters. Borrowing from cultural critic Larry Grossberg (2010: 101), "better conjunctural stories", in our case of seemingly predetermined processes of fintech platformization, allow us to reveal complex relationships between technologies and systems in context and across diverse, yet connected, places. While it could be said that much of relational scholarship would align with these claims and the concomitant methodological implications, these propositions have particular epistemological implications for our project, and therefore directly shaped our research practice—including how we selected our cases, structured data collection, engaged with emerging insights, and undertook the exercise of writing.

At the core, our three examples reflect a multi-case study of three cities in Africa; each case is read both on its own terms and in relation to the others. The selected cases shared a policy commitment to "become", or a reputation as, a "Silicon Valley elsewhere"—whether they are Capes or Savannahs (Cirolia et al., 2023; Pollio, 2020)—with significant investment in infrastructure to support "smartness" and ICT development. Building on existing research collaborations and networks, the three cities are, of course, quite unique. Cape Town and Nairobi have established themselves as "fintech capitals"—with Cape Town leading on high-value fintech services and Nairobi on the mobile money revolution. Nairobi and Kigali, both located in East Africa, are known for their smart city commitments (Cirolia et al., 2023; Guma and Monstadt, 2021), but they shore up very different arrangements, with Nairobi well-connected to the global Internet and Kigali landlocked. However, they have both made national commitments to invest in ICT development, across scale (Cirolia et al., 2023). Both Kigali and Cape Town are often presented as "outliers" on the African continent; Cape Town for its level of wealth and infrastructure, and Kigali for its levels of state control. Overall, each city provides us a unique perspective on the "fintech moment", and through collective lines of questioning around motorcycle paratransit, allow us to see different dimensions of how fintech has developed.

Our Southern orientation was articulated through some more, and some less, conventional methods for data collection and sense-making. In each city we developed a long list of platforms which deploy motorcycles for last-mile delivery, B2B services, and ride-hailing. Using this list, we built a taxonomy of ways that fintech was featuring in each of the ecosystems. We outlined how value creation was understood by the actors involved in the fintech offerings within the platform motorcycle economy, using this framework to develop a shared protocol for interviews. Working in teams of two people per city, we conducted interviews with actors involved in developing, financing, testing, and expanding various fintech-motorcycle taxi innovations. In addition to these interviews, we "scavenged" (Seaver, 2017) online, looking at startup promises and promotional materials; news items

in business and politics; reports on venture-capitalist investments; and policy documents. We downloaded the web-based applications that are being used to facilitate these networks and systems, playing with them, paying for things, calling customer support, and exploring their interfaces. We took public transport, observed at street corners, went on collective field trips, and had many informal conversations with motorcycle riders as we moved ourselves, and things we bought, around the cities. Alongside this, over the two-year period, we shared insights with one another—from news articles about regulatory changes in the fintech landscape to voice notes about motorcycle taxi rides—via our WhatsApp group. In doing so, we created our own archive of the ongoing dynamics of each city, and the relationships between them. To nurture spaces for collaborative analysis and conceptual rigor, in 2022 we came together for a virtual reading group, a research workshop, and a writing workshop. The writing workshop solidified the narrative of each of the cases, deploying "value creation" as a methodological and conceptual entry point. We believe that the insights in this piece would have been impossible without the breadth and situated insights garnered from our methodological approach.

In undertaking these case studies, our method was also infused by the research ethics and politics of our Southern orientation. Despite the importance of understanding the lived experience of financial technologies, we did not want to depend solely on the work (including emotional) of vulnerable people (such as riders or borrowers), who are often fatigued by endless academic inquiry with little evidence of material shifts in everyday experience. We found, instead, other ways to understand and make sense of value creation through the tracing and placing of technological arrangements which are "peopled" in all manner, and in multi-scalar ways. This approach should be read together with a growing scholarship on African platform labor (Anwar and Graham, 2020), even though the focus is different. Further on the front of ethical knowledge production, we were adamant about avoiding problematic divisions of global research labor, whereby data is mined in Africa and processed elsewhere (Mama, 2007); as such we focused on empirical and conceptual collaborations across sites, whereby research teams were based in each of the cities we focused on. Our methods included a strong politics of knowledge production which dislocated "field work" from a particular temporal moment. As the researchers leading the studies of each city were in fact living, working, and "from" the fields we explore, this allowed for a unique orientation and embeddedness, drawing on personal experiences and networks.

Beyond the coloniality of fintech in Africa

An expansive view of both finance and technology would suggest a long history of co-constitution; after all, double entry accounting would have been a challenge without the ledger itself. However, fintech, as it is used within the debates in question, is more specifically about digitally enabled logics of change and disruption. This innovation-speak is evident in the glossy reports and public accolades through which the development sector in Africa has for some time celebrated the ways in which digital innovation in finance has expanded the frontier of bankability, disrupted dated legacy systems, enabled data-driven decision-making, and used cities as "testbeds" of innovation. The critical corollary of this optimism, reflected in scholarship and activism, bemoans fintech's active production of financialized subjects and subjectivities (Gabor and Brooks, 2017). Critics argue that the rapid expansion of fintech has increased the scope and depth of extraction and inequality, expanded surveillance and behavior manipulation, and extended historical patterns of neoliberal capitalism. As Bateman et al. (2019: 480) point out, the "pillars of the global

development establishment and global financial industry have wholeheartedly embraced the new fintech narrative".

Critiques of fintech projects and programs have taken issue with both their ideological bases and their practical results. Scholars have reviewed the outcomes of financial inclusion initiatives, pointing to the delivery failures of their promises (Bernards, 2019; Bernards, 2022a). At the most basic level, such programs have tended to target people already included in financial systems. Where frontiers were in fact pushed and inclusion achieved, the pledged benefits often never materialized (e.g., in the DeSoto-inspired site and service schemes, few were able to capitalize on these assets). More importantly, these scholars attest, such programs—where they work at all—produce financialized subjects, families and communities stuck in steep debt traps, constantly disciplined by technologies that they have no control over (Aitken, 2017; Guermond, 2022; Torkelson, 2021). These financialized subjects operate not with the agency imagined by the development project, but rather for the benefit of global capital accumulation. Financial inclusion, and the associated fintech projects, form the "frontiers of neoliberal financialized capitalism in the global South" (Langley and Leyshon, 2021: 377). Africa's "fintech moment" should thus be read within a longer genealogy of attempts at turning poverty into profitable markets (Roy, 2010).

Within this broader critique of fintech in Africa as an infrastructural offshoot of global capitalism, a productive line of scholarship has challenged dehistoricized readings of financial technologies as "disruptive innovation", and charted the various colonial legacies that are embroiled in these projects (see Langley and Rodima-Taylor, 2022). For example, Langley and Leyshon (2022) focus on data-driven credit scoring, one of the key technological configurations through which financial inclusion becomes platformized in the African context, to argue that these sorting mechanisms at once enroll racially excluded populations and replicate the same colonial logics that previously marked their exclusion. Fintech, they argue, generates credit relations that are neocolonial in nature, as they extract rent not through empowerment but through racialized debt subjugation. In a similar vein, Campbell-Verduyn and Giumelli (2022) reflect on the "hype" around the blockchain cryptocurrency and challenge the argument that cryptocurrencies contribute to a decolonial financial agenda. Reflecting predominantly on sanctioned countries outside of Africa (China, Russia, etc.), they argue that efforts to advance cryptocurrency are re-wiring exclusionary relations in ways that extend rather than overcome colonial legacies (Campbell-Verduyn and Giumelli, 2022).[4] They hold out this critical caution to Africa, contending that there may be "decolonial possibilities offered by blockchain" (p.535), but ultimately arguing that "[e]xperimentation with blockchain technologies across the African continent risks being enrolled [in] socio-technical relations that [...] are persistently exclusionary" (p.536).

In more fine-grained analyses of the coloniality of fintech, other scholars have focused instead on the historical financial infrastructures that emerged out of colonialism and are now reinscribed into practices of financial innovation. Under the rubric of racial capitalism, for example, South African experiments with digitally enabled cash transfers (Torkelson, 2020), datafied credit-scoring for house seekers (Migozzi, 2023) have been shown to latch onto the colonial technologies of the apartheid state, while replicating the relationship of indebtedness that benefited its racial economies. Bernards (2022b), on the other hand, maps the uneven distribution of mobile money transactions in Kenya onto the uneven development of banking infrastructure that was germane to the financial geographies of British colonialism. Despite predictions of "leapfrogging" the country to a new era of equal access to financial services, he writes, "fintech has largely worked through pre-existing patterns of uneven development" (p.709) along the traces of imperial topologies. Similarly, Perticone et al. (2022) remark on the coloniality of inclusive insurance platforms—another fintech

product that has generated great hype in the African context—and note that data standards, collection, and appropriation rehash and entrench historical racial hierarchies between states and between peoples.[5] Even the fintech enrollment of informal financial infrastructures such as mutual savings groups, Rodima-Taylor (2022) argues, is shaped by colonial remains that, through digital platforms, carry forward inequalities that were scripted into the extractive logics of settler capitalism. The fintech-driven assetization of mutual networks, she notes, is a form of dispossession through which marginal economic lives are kept at the margins of financialized capitalism. Despite this bleak assay of African platform economies, Rodima-Taylor draws on Achille Mbembe to remind us that there is much to miss in analyses that perpetuate the same colonial tropes that they are meant to critique: in narratives defined by the past, where "the future horizon is apparently closed" (Mbembe 2001: 16, cited in Rodima-Taylor, 2022). African economies appear confined to a recursive set of critiques "that continue to deny postcolonial Africa its multiplicity and dynamism" (p. 431).

In many ways, this cautionary suggestion points to the work of scholars who have long challenged "frontierist" readings of science, technology, and (more recently) finance in the African continent. Historian Clapperton Mavhunga (2017), for example, makes the crucial point that a diffusionist model of technological transfer primes much critical scholarship on African technological configurations. Like coloniality, he explains, innovation is assumed to come from elsewhere—an imposition of sorts. When scholars write about the makings of platforms in Africa, they often focus on practices of tinkering, copycatting, resistance, and adaptation. Accordingly, this innovation-as-imposition perspective empirically neglects the many mathematics of value and modes of technicity (Simone, 2021) through which individuals and collectives define their access to and use of the economies of technology (Nowak, 2023) and, in our case specifically, to digital platforms in Africa. Underpinning this argument is a challenge to what constitutes technology itself, beyond the universalizing categories of western thinking (Hui, 2017). While we do not have space to address this broader philosophical question here, in our reading this is also an invitation to avoid technodeterminist claims about what fintech is said to be *doing*—claims that are more likely to fall into the trap of one-way-vector thinking about technology—and foreground instead the conjunctural ambivalence of these new financial configurations and devices. Ambivalence, as we deploy the term, engages the uncertain, unstable, and indeed multiple realities and futures that live within technologies. This ambivalence animates various aspects of fintech, from modes of datafication to the regulation of new platforms and systems, and, this article argues, its different horizons of value creation.

A techno-ambivalent perspective on fintech also resonates with STS-inspired analyses of financialization in Africa. In this sense, as Roitman (2023) writes, we are wary of setting up a sort of common binary between big tech/big finance (structural and bad) and African everyday life (which resists and tinkers with these systems). This binary does not only reproduce the frontier thinking that Mavhunga (2017) laments, it also overlooks the various forms of value creation, rather than extraction, that are beholden to platform economies (Goodfellow, 2020; Nowak, 2023; Roitman, 2023). Reflecting on the question of financial technologies, for example, Mizes (2023) argues that efforts to advance African capital markets hold within them the potential for new "financial publics"; such a reading challenges the idea that both the desire and instruments which animate these processes can be reduced to neocolonial financialization. Further, confining fintech to historical logics of Africa's subjugation and dependence is at odds with the ways in which fintech is seen, imagined, and experienced *in context*. We begin with the belief that unpacking the

perspectives of those involved with making and using technology in particular places and scenarios is important for retheorizing finance (Mizes, 2023). Like for other financial instruments more broadly (Mizes and Donovan, 2022), fintech entrepreneurs, proponents, regulators, and investors, as we will see, view fintech within bigger projects of value creation linked to economic independence and technological statecraft. We do not need to take these perspectives at face value to recognize that, alongside historical continuities of coloniality, fintech is enrolled into projects of transformation and sovereignty that produce messy interfaces with existing African urban economies—as with the example of the platformization of motorcycle taxis that we will explore in the following pages.

Platformed motorcycles and fintech: Nairobi, Kigali, and Cape Town

In general terms, "platformization" refers to the process of incorporating existing economies, or creating entirely new ones, through digital infrastructures that enable multi-sided markets and produce value through data-driven intermediation between different actors in these markets (Poell et al., 2019). In the African context, this process is increasingly predicated on the possibility of enrolling and making legible informal economies.[6] Activities that have thus far seemed to escape both the control of the state and the circuits of global capital are now imagined as a frontier for the expansion of digital platforms, whose capacity to garner and analyze data offer a response to the quandaries of unknowability and riskiness often associated with these economies.

Among the many informal systems with which platform companies and startups are experimenting, our focus is on motorcycle taxis. In urban Africa, riders "fill the gaps" (Goodfellow, 2020) of both commuting and last-mile logistics, in the absence of extensive public transport networks, and in the context of urban fabrics that require agile, cheap vehicles. Through the digitization of motorcycle taxis, a diverse variety of platforms are thus producing "algorithmic sutures" (Pollio et al., 2023) to splintered urban infrastructures and economies. It is in this context that a swelling number of experiments with fintech are targeting precisely the platformed motorcycle, mainly through four different yet often overlapping financial configurations: payment platforms which link riders to e-commerce (and thus to suppliers and buyers of goods and services); platforms that link riders to state-monitoring systems for tax collection; insurance products specifically designed for motorcycles and riders; and asset financing products that enable the purchase of motorcycles and other riding equipment.

Yet, even if there are commonalities across cities, the value-creation rationalities and the outcomes of these fintech experiments are often different, and follow divergent vectors. We will see how Nairobi has become a testbed for the development of the interface between material value (in the form of assets) and datafied speculation. We will explore how fintech in Kigali is a practice of state-led regulatory standardization. And finally, in Cape Town, we will observe how fintech preceded and indeed boosted the uptake of motorcycles, which in turn helps legacy supermarket chains that, through last-mile digital platforms, are seeking to create new markets beyond the historical edges of a racially segregated city. To be clear, the aim of this section is not to disavow the importance of colonial histories or the violence and extraction evident in African cities today. Rather, it is to consider how technologies, when enrolled in different African contexts, present different and diverse rationalities of value creation, within which there may exist alternative possibilities.

Datafied assetization: Nairobi

"Nairobi is a technological melting pot", observed a program manager at one of Nairobi's most popular startup incubators, while sipping coffee on the rooftop of the building. As she further explained, in places like that rooftop, Kenyan startuppers rub shoulders with their European and American counterparts, but also with increasing numbers of Asian investors and African venture capitalists. The incubator itself had recently been taken over by a Nigerian company with pan-African ambitions, something that, in her view, signaled Nairobi's capacity to attract people and capital to its "Silicon Savannah", a growing ecosystem of tech companies, fledgling startups, incubators, co-working spaces, government programs, and fast-paced investment cycles (Rosenberg and Brent, 2020).

A city often presented as ungovernable and in constant flux, Nairobi had indeed built a reputation as one of Africa's leading startup hubs, with fintech as one of its core areas. To explain this primacy in Africa's tech economy, our informants pointed to many different factors: from the Kenyan state's investment in ICT infrastructure and uptake of digital technologies, which had begun in the late 2000s with nation-wide developmental programs (Ndemo and Weiss, 2017); to the diffusion of mobile money (M-Pesa) and its early adoption as an alternative to both cash payments and bank saving accounts (Ngugi et al., 2010); to the availability of affordable phones that had begun in earnest after the government removed import duties on foreign technology; to the city's fame as a seat of multilateral organizations, such as UN agencies. Overall, these favorable conditions have generated a growing number of experiments with fintech platforms: experiments large and small, bootstrapped and highly choreographed, internationally and locally funded.

Over time, some of these experiments began to target motorcycle taxis, a ubiquitous urban fixture across Kenya (Pollio et al., 2023). In recalling the COVID-19 explosion of homegrown digital platforms in Kenya, a Singaporean fintech entrepreneur explained that the first fintech operators entering the market were providing asset financing options to riders for the purchase of their motorbikes. Using the existing mobile money infrastructure to enforce repayments, and the motorcycle as collateral, these companies offered credit to riders that would otherwise not be able to access bank loans and would normally resort to informal loan makers. The model, however, was flawed, our informant concluded. These credit offerings drowned, and continue to drown young drivers in expensive debts. Repossessions are common, and many companies have resorted to unsavory practices such as debt shaming. In 2022, even the Central Bank of Kenya, usually permissive with platform operators, forced the shutdown of many lending wallets.

Why is the asset-based financing business model flawed? Our informants would often explain that riders' income fluctuates wildly and is unpredictable. So too are their incidental costs. And data is hard to compile, as riders work across multiple apps, and often offline. As a response, delivery companies had started hiring *boda boda* (the Kenyan term for a motorcycle taxi) riders, rather than relying on their inconsistent gig work. The growth of e-commerce platforms in the years of the pandemic had allowed last-mile companies to become specialized business-to-business operations, offering plug-and-play services to any kind of online marketplace—from the delivery of groceries and consumer goods, to the distribution of drinking water and cooking fuel. But the issue of asset financing remains a challenge and, therefore, a potential opportunity for business models.

In May 2022, we sat down for an interview on this topic with a bank consultant who had become an expert in financing models for informal businesses. He admitted that until then it had been hard to convince credit institutions to finance *boda boda* riders, even for small loans. For that reason, many riders resorted to predatory lending wallets, which use mobile

money data to develop credit scores (and often also personal data to ensnare debtors). Donovan and Park (2022) have carefully termed this regime as a "zero-balance" economy, one in which credit serves to "buy time" in a context of volatility and lack of liquidity. But our financial expert believed that a new generation of business models was about to take off. These business models, borrowed from startups that were innovating warehouse restocking, offered a new mode of experimenting with data-rich credit profiles for riders.

In fact, many trials were already under way. Several startups had been conducting lengthy testbed experiments alongside the electrification of motorcycle fleets. The electric bike, whether an entirely new vehicle or an older scrambler retrofitted with a battery, played into the green transition rhetoric on the one hand, but also offered entirely new possibilities for capturing better data about its rider. Better data, in turn, would allow these e-mobility operators to better craft their asset-based financing schemes, particularly given the higher capital expenditure necessary to purchase an electric vehicle—or to electrify a legacy bike, for that matter. Some companies, therefore, were planning to retain ownership of the battery and use the bike as collateral. Others would incorporate pay-as-you-go mechanisms, already tested for solar kits, into the bike itself. Some planned to use the charging stations, too, as both data-capturing devices and real-life interfaces with the riders. Overall, the working hypothesis of these companies was that e-mobility financing would also generate value for bike operators by reducing their running costs, both for repair and for recharging. And to test this hypothesis, trials were proliferating.

These experiments were diverse in nature, reflecting different possible business models of asset financing and entry points. They were also run and funded by different entrepreneurs: from small European startups with access to development money to local teams supported by domestic or regional venture capital. Overall, one of our informants had counted more than 20 different pilot projects in Nairobi alone. He knew about all of them because, he explained, they had formed an informal group. Another interviewee, the program manager of a solar kit company venturing into the motorcycle industry, explained that although they were competitors and often secretive about their intellectual property, working together was necessary because they had to interface with state regulators to ensure compliance with future standardization policies that they all saw coming. Collectively, these fintech/e-mobility startups were also pledging to create value for the Kenyan state itself, and not just by gathering better data about mobility that could be used for better urban planning (a wishful vow of value creation in itself). At the core of their promise was fiscal benefit to the state coffers.

In the Kenyan context, utility companies currently oversupply (largely renewable) energy and would benefit from a transition from fossil fuels to electricity uptake. Meanwhile, the Kenyan economy is negatively affected by increases in the price of oil, but also by the volatility of the shilling against the dollar, which has been used to purchase oil on the global market since 1974. Unsurprisingly, the government has often had to intervene with fuel subsidies to cushion domestic markets from price spikes[7]—costs that are heavy for an indebted and inflation-prone national economy. Therefore, by transitioning a large, vital mobility system to electric power, fintech operators promise to enact value for the state, making it less dependent on fuel imports and, as a consequence, on the US dollar. One of our informants even boastfully suggested that the state should offer subsidized electricity to e-mobility operators, given that they were absorbing surplus electricity and reducing Kenya's reliance on foreign imports (and, therefore, dollar-based payments). In fact, in the latest tariff review, the country's Energy and Petroleum Regulatory Authority provided a special e-mobility tariff to incentivize the e-mobility sector. This aligns with larger matters of statecraft and monetary independence that Mizes and Donovan (2022) highlight

elsewhere, suggesting that financial experiments in Africa are often framed as critiques against the inequalities of global capital markets.

Whether or not these manifold promises will materialize in practice is beyond our purview, or the scope of this article. It also remains to be seen if, among these many choke points of value creation, the riders too will benefit from these processes of datafied assetization. So far, it may seem that such data practices are simply increasing the capacity of digital platforms to algorithmically manage an unwieldy urban system. But perhaps this too is an oversimplification of the new rationalities of knowledge, risk, and financial sovereignty that are injected and reconfigured through fintech. What the Kenyan case shows, in our reading, is a broad range of scripts through which values are imagined and potentially enacted—not just extracted. These form along vectors that diverge from the seemingly predetermined one-way legacies of coloniality. For instance, the transition to electric vehicles through fintech-based asset programs articulated value-creation promises of energy and monetary sovereignty, as well as optimized lending protocols. A confirmation of these statecraft rationalities came as we were writing the article, when the Kenyan government announced a dedicated program for accelerating the shift to electric *boda bodas*. Interestingly, as we have shown, these large-scale policies follow in the footsteps of tentative, experimental fintech devices, which operationalize informal economies as real-life, data-rich, platform-enabled testbeds of new modes of value creation.

Regulatory standardization: Kigali

In the streets of Kigali, Rwanda's capital and most populated city, two things seem ubiquitous: motorcycle taxis, with their red-vested *motaris* (riders), and mobile money outlets, with their bright yellow advertisements emblazoned on buildings, street poles, and kiosks. Just like Kenya's mobile money market is (almost) the monopoly of telecom operator Safaricom, in Rwanda the yellow signs symbolize the dominance of another provider, MTN, whose mobile money (MoMo) has become the backbone of financial transactions across the country. But while MTN's legacy in Rwanda since the late 1990s has laid the foundation for MoMo's dominance in the sector, behind the scenes there are increasing numbers of competitors in the fintech space.

A visit to Norrsken, a renowned startup hub in Kigali, offers a glimpse into the enthusiasm driving the expansion of this sector, which leverages Rwanda's Regulatory Sandbox, a regulatory platform facilitating digital innovation. Here, startups such as SPENN and Payingtone are experimenting with the expansion of fintech products, from retail to asset financing. The acceleration of digital offerings has a lot to do with Rwanda's commitment to ICT-led development since its Vision 2020[8] (published in 2000), which included the goal of "transforming the country from an agrarian economy into a knowledge-based economy". Through the state's investment in infrastructure and innovation over the past 20 years, Kigali has captured imaginations as a leading smart city in Africa and, although very different to Nairobi, has also been framed as a Silicon Savannah. In Rwanda, the national commitment to the development of ICT infrastructure and digital connectivity has been particularly public and, as some interviewees noted, arguably sensationalized.

Unlike in Kenya, where innovation is distributed among a number of actors, in Rwanda the national and highly centralized state plays a significant role in the way in which fintech has both evolved and interacts with everyday life. This is not always about financial value capture, but also has a lot to do with making informality manageable and governable through standardization. This uniformity is an everyday reality and striking feature of Kigali's public transport sector—a sector that is infamous for the use of motorcycle taxis

for all manner of mobility (Goodfellow, 2015). Everywhere, and at all times of day, a sea of red helmets and vests darts in and around the city streets.

Whereas other cities, like Nairobi and Cape Town, have a wide range of motorcycle mobility service providers, YegoMoto is the dominant player in Kigali (Martin et al., 2023). This dominance is largely due to YegoMoto's Intelligent Connected Fare Meter (ICFM). Within 10 years from conception, YegoMoto fitting centers are packed with *motaris* updating hardware and software, installing or repairing devices on their bikes, and ensuring their bikes are fit for the road. The ICFM's history began in 2015, during the Transform Africa Summit, when the government expressed a need to develop a granular, individualized, digital monitoring tool. The proliferation of motorcycle taxis across the city was recognized by the Rwandan Utilities Regulatory Authority (RURA) as an opportunity to capture more than monetary value, by bringing *motaris* into a formalized system. In response to such a need, the initiators of YegoMoto, a Rwandan registered smart mobility company with Singaporean origins, conceptualized a digital fare metering and monitoring platform that later became the ICFM.

While the ICFM was initiated by a private company, it is the government that took a central and active role in ensuring its full operationalization and that worked to formalize and standardize what was initially an experimental digital gadget into an inescapable regulatory instrument. The government also issued successive regulations fixing the ICFM's technical specifications and fare rates, and even devised a mechanism to easily provide ICFM devices to *motari* (given freely on a two-year loan basis), in addition to import-tax exemptions for the devices. These interventions focused on the supply side of the ICFM. Another set of government interventions aimed to tackle the demand side of the ICFM. These consisted essentially of legally binding regulations making the ICFM obligatory to all *motaris*, who must prove they either have or are waiting for the ICFM when stopped by the traffic police. For RURA, standardization is seen as having a number of different value offerings. In essence, the state has signaled a move away from taking a punitive stance on informal economies, choosing rather to include them more systematically within formal systems.

According to state officials involved in the program, bringing both the riders, users, and authorities into a single system makes the *motari* "manageable". The red vests are both a striking branding exercise and serve to differentiate between the "professional" (legal and ICFM-connected) *motaris* and the "non-professional" (illegal) ones. They also signal the state-mandated organization of *motaris* into cooperatives, district unions, and a national federation through the *motari* number emblazoned on vests and number plates. Motorcycles can be dangerous modes of transport. Regulating the asset, movements, and *motari*, it is argued, allows for greater safety and accountability for riders and passengers. This legibility goes beyond the red-vested *motaris* themselves, and renders an historically invisible economy legible to the state. Rendering the *moto* economy visible also makes it taxable. This type of public financing, much like financing within the real estate sector, enhances value through infrastructural investment or regulatory changes in a bid to eventually recuperate the surplus value in part or in whole. While it is difficult to measure income accurately, the government has resorted to a monthly tax of around 5 000 Rwandan Francs ($4) (Frw). Digitization through the ICFM standard, it is believed, will ultimately provide more precise data about taxable incomes. In addition to taxation of this sector, platformization through the ICFM is touted as being valuable for data-led decision-making around economic and urban planning. Furthermore, state officials argue that the ICFM helps expand government services to *motaris*. An example of these services includes the enrollment of ICFM-registered *motaris* in the "Ejo Heza" life insurance and pension scheme, in which *motaris* contribute at

least 2000 Rwandan Francs ($2) per month and can in turn gain not only pension savings but also indemnity in case of terminal illness or death. Such efforts, from taxation to improved planning to the expansion of insurance, do not negate the potentially controlling or extractive role of the state, but they do suggest that value creation is taking place.

Despite these promises, there is resistance to joining the platform by both *motaris* and passengers. Passengers are skeptical about the increased cost of travel. *Motaris* are reluctant, citing fears of income loss associated both with fare capping and taxation. Due to these tensions, as of 2023, the ICFM is still being contested—with the local media weighing in regularly. This context leaves many uncertainties. However, it equally offers insights into platformization processes led by states (see Steinberg et al., 2024) wielding more or less capacity to compel enrollment. While Kigali may be an extreme case, it shows the active role of state rationalities (also evident in both the Cape Town and Nairobi cases) in the in the fintech-value creation nexus. In contrast to much of the fintech imagination, Kigali is not the Wild West or an unwieldy frontier—it is actually a site of careful statecraft in which technology plays a complex role beyond extraction and involves the deployment of supply-side measures through nomenclature and provision, and demand-side measures through regulation and policing by the government.

Algorithmic integration: Cape Town

Following decades of state investment in ICT and technological infrastructure (Boyle et al., 2023; Odendaal, 2016), Cape Town has positioned itself as one of the leading "fintech capitals" of Africa. Testament to these focused efforts (see, for example, the "Silicon Cape" partnership), the city has birthed (and incubated) all manner of startups that aim to address challenges unique to African urban contexts—from overcoming the absurdly high fees for pan-African remittances, to integration of informal businesses into logistical value chains (Pollio and Cirolia, 2022). In the face of considerable contestation and anger, Cape Town has also attracted global tech giants; as a panelist at a local networking event remarked:

> It is a common myth that Africa does not have the talent to service this astronomical growth in demand for fintech skills, specifically software engineering skills. South Africa, specifically, has some of the most skilled engineers in the world. Just ask Amazon, [which is] setting up [its] global tech hub here.

In contrast to many African countries, South Africa—Cape Town included—has a small motorcycle taxi sector (see, for example, the Bishop and Courtright 2022 report, which estimated only six hundred thousand motorcycle vehicles across the country as of 2020). Having never been widely used for passenger services, the rise of the two-wheeler has gone hand-in-hand with the rise of platformed and on-demand services, particularly related to food value chains. Today, it is rare to find a shopping center or popular restaurant in Cape Town that does not have a group of riders, with branded vests and vehicles, waiting for orders to come through on their phones.

In the early stages of this research on African fintech and platformed motorcycles, Cape Town felt like an outlier next to Kigali and Nairobi. While prepared-food delivery companies, such as UberEats and the locally developed Mr D, were busy "discovering" the value of the two-wheeler for improved last-mile business processes, fintech companies were focused on developing their own advanced and niche financial products, e.g., Luno's cryptocurrency wallet and Yoco's payment systems for small businesses. Cape Town's fintech boom was not

only set against the afore-discussed investments in ICT infrastructure and the startup economy, but also against South Africa's highly advanced banking sector. Notwithstanding (or possibly because of) colonial and apartheid legacies, which have resulted in a handful of major banks controlling much of the finance space, the sector has made considerable (albeit insufficient) strides in terms of ensuring basic inclusion (in part driven by the need to disburse various forms of social grants in the context of deep and racialized poverty) (Torkelson, 2020). This has provided the foundation for the fintech platform boom we see today in Cape Town.

In contrast to the Kigali and Nairobi cases, these platform innovations, in the context of Cape Town, took place in technology itself—the software as a service (SaaS, sometimes referred to as platform as a service, PaaS). SaaS refers to a cloud-based model where software applications are provided over the Internet. Overall, the platformization of motorcycles required the integration of existing digital payment systems and a linking together of the e-commerce and last-mile logistic platforms. Companies like Mr D and Picup do exactly that by operating as a SaaS application in two particular ways: first, by providing an online platform and mobile app to customers to order food and groceries from restaurants and supermarkets; and second, by operating as business-to-business platforms that allow restaurants and supermarkets to make use of their rider network and other integral services such as order management, real-time tracking and route optimization, data analytics, reporting capabilities, and customer services. These platforms ultimately act as digital markets connecting restaurants, supermarkets, customers, and riders. This has allowed retailers and big supermarkets to diversify their offerings to customers while also allowing new businesses to emerge—such as the "dark kitchens" (virtual restaurants that operate via food delivery apps) across the city—through optimized delivery services and operations. A slew of services (and thus jobs) that were not available before has emerged. Moreover, the proliferation of SaaS business models allows us to see Cape Town as a site of homegrown innovation and not just as a receiver of innovation from elsewhere (Roitman, 2023).

Perhaps the most pronounced indicator of value creation has been the clear expansion of supermarket chains, most of which have, over the past four years, created last-mile delivery apps which include digital payment options of various sorts and rely on motorcycle riders to deliver goods on demand. South African supermarkets have, for decades, been instrumental in shaping urban economies (Battersby and Peyton, 2014). However, this platformization of payments, logistics, and work reflects a new space of innovation (what might, to some, be seen as a frontier). A good example of this is blue-chip retailer Shoprite Holdings Ltd, Africa's largest supermarket chain, headquartered in Brackenfell, Cape Town. Shoprite-owned Checkers (a brand targeting middle-income customers) launched its own on-demand grocery delivery app in 2019—Checkers Sixty60. This platform is a product of Shoprite^{X}, the Shoprite Group's in-house innovation incubator business unit (Ndzendze, 2022). Shoprite further invested in a local technology startup company, Omnisient, a consumer data platform. "We are excited by local startups that are creating value for our customers and partner businesses, whilst having privacy at the core of their offering," noted the Chief of Strategy and Innovation at Shoprite^{X} in an interview in 2022. Shoprite/Checkers was also able to collect and track consumer data through its Checkers Xtra Savings rewards card. In part owing to the careful deployment of data and software, the success of Checkers Sixty60 exceeded expectations, resulting in the further rollout of stores where on-demand services would become available, including previously overlooked areas of the city, such as lower-middle-income areas. After Shoprite launched a Checkers Sixty 60 app, there was a cascading effect which snowballed into other supermarket chains expanding their offerings into last-mile delivery. All the major supermarkets now have

platforms which use motorcycles for delivery. For example, in 2022 Spar launched SPAR2U; in 2021 Pick 'n Pay launched ASAP!, and in 2020 Woolworths launched Dash.

Turning attention to the rider, the Cape Town case is again unsettled and multiple. Notably, and unlike the cases in Kigali and Nairobi, the riders themselves are not a key target of fintech innovation. Despite the need for more affordable insurance and asset financing options, interviewees argued that there is too much uncertainty and risk in financing riders or their vehicles. The fact that the sector's labor is dominated by what is commonly referred to in South Africa as "foreign nationals" has added layers of perceived risk to an industry already on the margins of profitability and legality, and has resulted in a focus on other sites of fintech innovation. Without in any way aiming to minimize the violent and extractive nature of digital platforms, the expansion of the fintech-supermarket network through the use of platformed motorcycle taxis has, however, created a whole new economy in Cape Town. For many foreign-national riders, who have limited rights to work in South Africa, this is the only option for work, however precarious.

Overall, the use of fintech to enable on-demand food delivery—both for supermarkets and for prepared foods—reformats the food landscape (e.g., including dark kitchens in new logistical networks), changing how food providers "see" customers, and how people, in return, engage with food economies. Coupled with the expansion of prepared-food delivery through services like UberEats and Mr D (owned by e-commerce giant Takealot), these platforms are using motorcycles to provide the missing link in the ecommerce/goods distribution system—shifting the value configurations and optimizing various parts of the business process. These services are not only used by South African elites, but also by the middle and lower middle classes. For example, most of the major supermarkets have expanded their delivery offering to lower-income areas of the city, including the Cape Flats (a large expanse of the city where most Black, Indian and Coloured citizens were forcibly removed to under apartheid, and which continues to be economically marginalized). In other words, a new value economy of ease and convenience is emerging in parts of the city that, under the infrastructural violence of segregated planning, were by design disconnected from basic economic rights and possibilities. These are undeniably new frontiers of profit for supermarkets and their pick-up offerings, and other parts of the city continue to be excluded; yet these platformed services are also the sites through which households that were previously factored out because of their geography can now opt into very mundane services like receiving groceries at home. In the Cape Flats, besides supermarkets, other small businesses have started to take advantage of the possibilities of diversifying their offerings through dark kitchens, expanding their customer base through motorbike-enabled delivery services in neighborhoods where this was previously not considered or even a possibility. At the same time, the deployment of SaaS by supermarkets extends beyond the development of payment platforms for e-commerce—supermarkets are now involved in all manner of fintech innovation (e.g., remittances, lending, etc.) (Cirolia et al., 2022). Unusual contenders in the data and tech game, supermarkets may play an even more central role in questions of urban development in the future. Ultimately, with their SaaS infrastructure and their fleets of motorcycle riders, they are already foreshadowing a horizon of value in the *reintegration* of small and large businesses, workers, and consumers in a divided, sprawling, worlding city.

Beyond fintech as exploitation: towards an ambivalent reading of value creation

In African cities, the "recursivity of colonialism" (Parisi and Dixon-Román, 2020) continues to animate debates about technological transitions. Undeniably, fintech infrastructures are also shaped by durable legacies that have invariably disadvantaged people, firms,

companies, and states in persistent (and, in fact, violent) ways. And, while not all these processes center on the West (Campbell-Verduyn and Giumelli, 2022), it remains useful to critique the ways—both new and emerging—whereby colonial extraction, control, and exclusion remain central to technological configurations and their outcomes.

At the same time, as this special issue intends to do, the cases presented in this article challenge us to consider how—beyond the lens of coloniality—these financial infrastructures reconfigure economic processes with interesting socio-spatial effects. As the platformization of motorcycle taxis has created new avenues for the expansion of financial technologies in African cities, motorcycle economies (as well as the riders and users of these platforms) are enrolled in both the imagined and actualized value registers that emerge from these platforms. The choice to focus on value creation is as much a response to the empirical reality of the cities in question, as it is a pragmatic (and possibly even political) impulse.

While we did not aim to define value itself, we have shown how "value creation"—as a multiple horizon of action and speculation—is articulated. Namely, each of the three cases provided us with a glimpse of the specific manners in which value (of various sorts) is created and captured in ways both expected and surprising. In Nairobi we have seen how fintech platforms imagine new data-rich environments for asset-based value creation that would, in turn, foster the transition to less fuel- and US dollar-dependent mobility infrastructures. In Kigali, we have observed the ways in which platforms aim to create value for the state, through both the collection of taxes and data for planning. And in Cape Town we described fintech platforms as driving new forms of convenience and work that reintegrate a splintered city. While we have used each case to foreground a particular value creation process, these processes are by no means exclusive to that case. The standardization push that is emblematic in Kigali, for example, is also present in the context of Nairobi's e-mobility space, with the interoperability of batteries and charging stations a site for business model development and state negotiations. In the case of Cape Town, where we see the lower middle-income consumers being integrated into convenience economies, there are parallels in Nairobi's platform expansion. At the same time, the sites where value extraction accrues in more exploitative and extractive ways can also be seen across the cases (e.g., the ways in which data on riders is collected by companies), albeit, we argue, in variegated and often quite different ways.

Beyond these multiple sites of value creation, our cases confirm that Africa is not simply experiencing a moment in global fintech's spread (as the McKinsey headline might suggest), but is central to the making and remaking of these new techno-financial infrastructures. Firms—many of which defy the local/global dichotomy (Cirolia et al., 2023)—are using fintech for a wide array of reasons, enabling the everyday economies, social worlds, and political arenas of cities to function and transform in a context of contestations and trade-offs. Fintech platforms are being made from scratch, remade, circulated, adapted, glitched, and appropriated—by people, firms, and even states—in ways that reflect their contested nature and contingent futures. We argue that, as much as we need to be wary of the ways in which such platforms risk consolidating power and subjugating fintech users to various forms of extraction (we are not blind, for example, to the ways that the state in Kigali, and the supermarkets in Cape Town, are benefiting from these processes), a wide range of rationalities and explanatory logics coexist.

By centering African cities in these processes of fintech innovation, we challenge the current critical scholarship on the coloniality of fintech, which actively reduces African innovation, and those involved in these economies such as states and startups, to reactive participants in a preordained script—resistance or adaptation. This commitment to recentering African experiences is inspired by Mavhunga (2017), who questions the reduction of

Africa's relationship with technology to a discourse of global imposition and local tinkering, reminding us that different sites and processes of value creation, in this sense, operate as heuristics that overcome derivative and reactive readings of African technological experiences. We believe such a perspective is as much empirical as it is political. Like scholars who have sought to challenge simplistic readings of financialization and platform extraction (for examples, see Elyachar, 2023; Mizes, 2023; Nowak, 2023), we seek to foreground multiple sites of agency, imagination, and claim-making beholden to fintech infrastructure—especially as they relate to the question of value creation (Roitman, 2023).

We now turn to the political, and indeed propositional, impulse which this orientation offers us. If, as many texts in fact do, we only see these processes as expansionary frontiers, the possibility of what might be engaged productively and propositionally becomes void. Such a mode of critique also fails to attend to ways that colonial constraints might also be undone, or challenged, in this way. On a deeper level, this reflects a call for a conceptual shift towards seeing fintech itself as an "ambivalent" infrastructure. Not to be confused with neutrality, ambivalence decouples the material technology from the ways in which particular aspirations, desires, and moralities might be embedded in such technicity (Cupers and Meier, 2020; Simone, 2021). It presents technology generally, and fintech as an instance of such, as suspected between possible futures in the making, and subject to a range of plural rationalities and political projects (Pollio and Cirolia, 2022). The ambivalent infrastructural nature of "fintech"—the sites of hard investment, softer calculations, discursive imaginaries, and the like—provides a scaffold for us to ask an important question: if fintech infrastructures are not overdetermined by colonial processes of value extraction, can their potential for value creation be harnessed *otherwise*?

This ambivalence is deepened through our Southern orientation and method; we as researchers live and work alongside these technological innovations, and have ourselves benefited in disparate ways from their development. As we have endeavored to show, starting *from* African cities as sites of fintech innovation released our contribution from the frontier discourse, allowing us to see *more than* as well as *the contours of* the realities of coloniality and capitalism. In practice, Africa's urban economies are increasingly platformed, with all the ensuing contradictions. At the same time, people in Africa (like everywhere in the urban world) need functional financial products—formatted to the needs of their lives, livelihoods, and aspirations. Conceptually, if we fail to engage productively with these needs, we may conflate fintech with a modernizing project, and fail to "see" the productive, emancipatory, or simply enjoyable aspects of technological deployment. In doing so, we lose a valuable opportunity to actively consider (and even co-create) the terms and conditions of just technological and financial futures in Africa.

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Notes

1. https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/chart-of-the-day/fintechs-moment-in-africa. It is important to acknowledge that finance and technology have always been co-constitutive. However, the fintech described in this piece relates to a set of innovations and disruptions at the interface between digital advancements and financial transformations.
2. For a similar argument drawing on Singapore's fintech ecosystem, see Woods et al. (2023).
3. The past five years have seen a surge in offerings. In 2018, Uber launched its motorcycle offering, Uber Boda, in several East African countries. This followed the introduction of ride-hailing platforms in West Africa. See https://marketingedge.com.ng/the-battle-of-bike-ride-hailing-taxi-in-lagos-market/
4. These arguments fall within a much broader scholarship that has denounced the algorithmic colonialism of digital technology in general (Birhane, 2020; Couldry and Mejias, 2019; Gravett, 2020; Mouton and Burns, 2021), and race scholars whose work has shown, against the purported neutrality of data-driven platforms, the permanence of racialization (Benjamin, 2020; Chun, 2021).
5. Note, however, that there exists a set of scholarship on biometric identification for fintech that has been more attentive to its ambivalence (e.g., Breckenridge,2010; 2014).
6. Across the developing world, a major argument for fintech has been addressing informal and illicit flows of money, for example, from the informal economy. For a broader perspective, see Surie and Huws (2023). For reflections on cashless economies and tax enrollment in India, see the helpful work of Athique (2019).
7. The 2023 and 2024 protests in the country exemplify and draw attention to this.
8. https://faolex.fao.org/docs/pdf/rwa149721.pdf

References

Aitken R (2017) All data is credit data: Constituting the unbanked. *Competition and Change* 21(4): 274–300.

Athique A (2019) A great leap of faith: The cashless agenda in digital India. *New Media & Society* 21(8): 1697–1713.

Alami I and Guermond V (2023) The color of money at the financial frontier. *Review of International Political Economy* 30(3): 1073–1097.

Anwar MA and Graham M (2020) Hidden transcripts of the gig economy: Labour agency and the new art of resistance among African gig workers. *Environment and Planning A: Economy and Space* 52(7): 1269–1291.

Ballestero A, Muehlebach A and Pérez-Rivera G (2023) What is a financial frontier? *Journal of Cultural Economy* 16 (3): 311–322.

Bateman M, Duvendack M and Loubere N (2019) Is fin-tech the new panacea for poverty alleviation and local development? Contesting Suri and Jack's M-Pesa findings published in 'Science'. *Review of African Political Economy* 46(161): 480–495.

Battersby J and Peyton S (2014) The geography of supermarkets in Cape Town: Supermarket expansion and food access. *Urban Forum* 25: 153–164.
Benjamin R (2020) *Race after Technology: Abolitionist Tools for the New Jim Code*. Cambridge: Polity.
Bernards N (2019) The poverty of fintech? Psychometrics, credit infrastructures, and the limits of financialization. *Review of International Political Economy* 26(5): 815–838.
Bernards N (2022a) *A Critical History of Poverty Finance: Colonial Roots and Neoliberal Failures*. London: Pluto Press.
Bernards N (2022b) Colonial financial infrastructures and Kenya's uneven fintech boom. *Antipode* 54(3): 708–728.
Bernards N and Campbell-Verduyn M (2019) Understanding technological change in global finance through infrastructures. *Review of International Political Economy* 26(5): 773–789.
Bhan G (2019) Notes on a Southern urban practice. *Environment and Urbanization* 31(2): 639–654.
Birhane A (2020) Algorithmic colonization of Africa. *Script-Ed* 17: 389.
Bishop T and Courtright T (2022) The Wheels of Change: Safe and Sustainable Motorcycles in Sub-Saharan Africa. Available at: www.fiafoundation.org/resources/the-wheels-of-change-safe-and-sustainable-motorcycles-in-sub-saharan-africa (accessed 12 August 2023).
Bowker GC and Star SL (2000) *Sorting Things out: Classification and Its Consequences*. Cambridge, MA: MIT Press.
Boyle L, Harlow J and Keeler LW (2023) (D)evolving smartness: Exploring the changing modalities of smart city making in Africa. *Urban Geography* 45(4): 1–25.
Breckenridge K (2010) The world's first biometric money: Ghana's e-Zwich and the contemporary influence of South African biometrics. *Africa* 80(4): 642–662.
Breckenridge K (2014) *Biometric State*. Cambridge: Cambridge University Press.
Campbell-Verduyn M and Giumelli F (2022) Enrolling into exclusion: African blockchain and decolonial ambitions in an evolving finance/security infrastructure. *Journal of Cultural Economy* 15(4): 524–543.
Chun WHK (2021) *Discriminating Data: Correlation, Neighborhoods, and the New Politics of Recognition*. Cambridge: MIT Press.
Cirolia LR, Hall S and Nyamnjoh H (2022) Remittance micro-worlds and migrant infrastructure: Circulations, disruptions, and the movement of money. *Transactions of the Institute of British Geographers* 47(1): 63–76.
Cirolia LR, Sitas R, Pollio A, et al. (2023) Silicon Savannahs and motorcycle taxis: A Southern perspective on the frontiers of platform urbanism. *Environment and Planning A: Economy and Space* 55(8): 1989–2008.
Cooper F (2005) *Colonialism in Question: Theory, Knowledge, History*. California: University of California Press.
Couldry N and Mejias UA (2019) Data colonialism: Rethinking big data's relation to the contemporary subject. *Television & New Media* 20(4): 336–349.
Couldry N and Mejias UA (2019) *The Costs of Connection: How Data is Colonizing Human Life and Appropriating It for Capitalism*. Stanford: Stanford University Press.
Cupers K (2021) Editorial: Coloniality of Infrastructure. *E-flux* September (2021) Available at: www.e-flux.com/architecture/coloniality-infrastructure/412386/editorial/.
Cupers K and Meier P (2020) Infrastructure between statehood and selfhood: The trans-African highway. *Journal of the Society of Architectural Historians* 79(1): 61–81.
Donovan KP and Park E (2022) Knowledge/seizure: Debt and data in Kenya's zero balance economy. *Antipode* 54(4): 1063–1085.
Elyachar J (2023) Relational finance: Ottoman debt, financialization, and the problem of the semi-civilized. *Journal of Cultural Economy* 16(3): 323–336.
Enns C and Bersaglio B (2020) On the coloniality of "new" mega-infrastructure projects in East Africa. *Antipode* 52(1): 101–123.
Furlong K (2014) STS beyond the 'modern infrastructure ideal': Extending theory by engaging with infrastructure challenges in the South. *Technology in Society* 38: 139–147.

Gabor D and Brooks S (2017) The digital revolution in financial inclusion: International development in the fintech era. *New Political Economy* 22(4): 423–436.
Goldman M (2023) Speculative urbanism and the urban-financial conjuncture: interrogating the afterlives of the financial crisis. *Environment and Planning A: Economy and Space* 55(2): 367–387.
Goodfellow T (2015) Taming the "rogue" sector: Studying state effectiveness in Africa through informal transport politics. *Comparative Politics* 47(2): 127–147.
Goodfellow T (2020) Finance, infrastructure and urban capital: The political economy of African 'gap-filling'. *Review of African Political Economy* 47(164): 256–274.
Gravett W (2020) Digital neo-colonialism: The Chinese model of internet sovereignty in Africa. *African Human Rights Law Journal* 20(1): 125–146.
Grossberg L (2010) *Cultural Studies in the Future Tense*. Durham: Duke University Press.
Guermond V (2022) Whose money? Digital remittances, mobile money and fintech in Ghana. *Journal of Cultural Economy* 15(4): 436–451.
Guma PK and Monstadt J (2021) Smart city making? The spread of ICT-driven plans and infrastructures in Nairobi. *Urban Geography* 42(3): 360–381.
Haag S (2022) Old colonial power in new green financing instruments. Approaching financial subordination from the perspective of racial capitalism in renewable energy finance in Senegal. *Geoforum* 145: 1–13.
Hall S, Leaver A, Seabrooke L, et al. (2023) The changing spatial arrangements of global finance: Financial, social and legal infrastructures. *Environment and Planning A: Economy and Space* 55(4): 923–930.
Hui Y (2017) On Cosmotechnics: For a Renewed Relation between Technology and Nature in the Anthropocene. *Techné: Research in Philosophy and Technology* 21(2/3): 319–341.
Kimari W and Ernstson H (2020) Imperial remains and imperial invitations: Centering race within the contemporary large-scale infrastructures of East Africa. *Antipode* 52(3): 825–846.
Kumar A (2011) *Understanding the emerging role of motorcycles in African cities: A political economy perspective*. The International Bank for Reconstruction and Development/The World Bank. Available at: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/391141468007199012/understanding-the-emerging-role-of-motorcycles-in-african-cities-a-political-economy-perspective (accessed 16 February 2023).
Langley P and Leyshon A (2021) The platform political economy of FinTech: Reintermediation, consolidation and capitalisation. *New Political Economy* 26(3): 376–388.
Langley P and Leyshon A (2022) Neo-colonial credit: FinTech platforms in Africa. *Journal of Cultural Economy* 15(4): 401–415.
Langley P and Rodima-Taylor D (2022) FinTech in Africa: An editorial introduction. *Journal of Cultural Economy* 15(4): 387–400.
Levenson Z and Paret M (2022) The three dialectics of racial capitalism: From South Africa to the US and back again. *Du Bois Review: Social Science Research on Race* 20(2): 333–351..
Mama A (2007) Is it ethical to study Africa? Preliminary thoughts on scholarship and freedom. *African Studies Review* 50(1): 1–26.
Mann L and Iazzolino G (2019) *See, Nudge, Control and Profit: Digital Platforms as Privatized Epistemic Infrastructures*. Bangalore: IT for Change.
Martin E, Courtright T, Nkurunziza A, et al. (2023) Motorcycle taxis in transition? Review of digitalization and electrification trends in selected East African capital cities. *Case Studies on Transport Policy* 13: 1–10.
Mavhunga CK (2017) Introduction: What do science, technology, and innovation mean from Africa? In: Mavhunga CK (ed.) *What Do Science, Technology, and Innovation Mean from Africa*? Cambridge: The MIT Press, pp. 1–28.
Mazzucato M (2018) *The Value of Everything: Making and Taking in the Global Economy*. London: Hachette UK.
McKinsey (2022) *Fintech's Moment in Africa*. Available at: www.mckinsey.com/featured-insights/sustainable-inclusive-growth/chart-of-the-day/fintechs-moment-in-africa (accessed 18 January 2023).

Migozzi J (2020) Selecting spaces, classifying people: The financialization of housing in the South African city. *Housing Policy Debate* 30(4): 640–660.
Migozzi J (2023) The good, the bad and the tenant: Rental platforms renewing racial capitalism in the post-apartheid housing market. *Environment and Planning D: Society and Space* 0(0): 1–21.. DOI:10.1177/02637758231195962.
Mizes JC (2023) Anti-public finance? The democratic effects of municipal bond markets. *International Journal of Urban and Regional Research* 47(6): 917–939.
Mizes JC and Donovan KP (2022) Capitalizing Africa: High finance from below. *Africa* 92(4): 540–560.
Mouton M and Burns R (2021) (Digital) Neo-colonialism in the smart city. *Regional Studies* 55(12): 1890–1901.
Muniesa F (2017) On the political vernaculars of value creation. *Science as Culture* 26(4): 445–454.
Mutongi K (2017) *Matatu: A History of Popular Transportation in Nairobi*. Chicago: University of Chicago Press.
Ndemo B and Weiss T (2017) *Digital Kenya: An Entrepreneurial Revolution in the Making*. Berlin: Springer Nature.
Ndzendze B (2022) Digital policy entails theorising and regulating a dynamic sector domestically and globally. *Digital Policy Studies* 1(2): i–iv.
Ngugi B, Pelowski M and Ogembo JG (2010) M-pesa: A case study of the critical early adopters' role in the rapid adoption of mobile money banking in Kenya. *The Electronic Journal of Information Systems in Developing Countries* 43: 1–16.
Nowak S (2023) The social lives of network effects: Speculation and risk in Jakarta's platform economy. *Environment and Planning A: Economy and Space* 55(2): 471–489.
Odendaal N (2016) Getting smart about smart cities in Cape Town. In: Marvin S, Luque-Ayala A and McFarlane C (eds) *Smart Urbanism: Utopian Vision or False Dawn*? London: Routledge, pp. 71–87.
Ouma S (2020) *Farming as Financial Asset: Global Finance and the Making of Institutional Landscapes*. Newcastle upon Tyne: Agenda Publishing Limited.
Parashar S and Schulz M (2021) Colonial legacies, postcolonial 'selfhood' and the (un) doing of Africa. *Third World Quarterly* 42(5): 867–881.
Parisi L and Dixon-Román E (2020) Data capitalism, sociogenic prediction, and recursive indeterminacies. In: Mörtenböck P and Mooshammer H (eds) *Data Publics*. London: Routledge, pp. 48–62.
Partech Partners (2022) 2022 Africa Tech Venture Capital Report. Available at: https://partechpartners.com/2022-africa-tech-venture-capital-report/#section1 (accessed 17 January 2023).
Peck J and Whiteside H (2016) Financializing Detroit. *Economic Geography* 92(3): 235–268.
Perticone Y, Graz JC and Rahel K (2022) Datanalysing the uninsured: The coloniality of inclusive insurance platforms. *Competition & Change* 27(3–4): 594–614.
Poell T, Nieborg D and Van Dijck J (2019) Platformisation. *Internet Policy Review* 8(4): 1–13.
Pollio A (2020) Making the silicon cape of Africa: Tales, theories and the narration of startup urbanism. *Urban Studies* 57(13): 2715–2732.
Pollio A, Cirolia LR and Ong'iro Odeo J (2023) Algorithmic suturing: Platforms, motorcycles and the 'last mile' in Urban Africa. *International Journal of Urban and Regional Research* 47(6): 957–974.
Pollio A and Cirolia LR (2022) Fintech urbanism in the startup capital of Africa. *Journal of Cultural Economy* 15(4): 508–523.
Rodima-Taylor D (2022) Platformizing Ubuntu? FinTech, inclusion, and mutual help in Africa. *Journal of Cultural Economy* 15(4): 416–435.
Roitman J (2023) Platform economies: Beyond the North-South divide. *Finance and Society* 9(1): 1–13.
Rosenberg L and Brent A (2020) Infrastructure disruption in 'Silicon Savannah': Exploring the idea of the creative class and their relation to quality of place in Nairobi, Kenya. *International Journal of Urban and Regional Research* 44(5): 809–820.
Roy A (2010) *Poverty Capital: Microfinance and the Making of Development*. London: Routledge.
Scheba A (2023) Financializing Africa's urban peripheries: the rise of housing microfinance. *Urban Geography* 44(5): 1050–1058.

Seaver N (2017) Algorithms as culture: Some tactics for the ethnography of algorithmic systems. *Big Data & Society* 4(2): 1–12.
Simone A and Pieterse E (2017) *New Urban Worlds: Inhabiting Dissonant Times*. Cambridge, UK: Polity Press.
Simone A (2021) Ritornello: 'People as infrastructure'. *Urban Geography* 42(9): 1341–1348.
Star SL (1999) The ethnography of infrastructure. *American Behavioral Scientist* 43(3): 377–391.
Steinberg M (2020) LINE as super app: Platformization in East Asia. *Social Media+ Society* 6(2): 1–10.
Stoler AL (2016) *Duress: Imperial Durabilities in Our Times*. Durham: Duke University Press.
Steinberg M, Zhang L and Mukherjee R (2024) Platform capitalisms and platform cultures. *International Journal of Cultural Studies* 0(0): 1–9. https://doi.org/10.1177/13678779231223544
Surie A and Huws U (2023) Platformization and informality: Pathways of change, alteration, and transformation. In: Surie A and Huws U (eds) *Platformization and Informality*. London: Palgrave Macmillan.
Tadiar NX (2022) *Remaindered Life*. Durham: Duke University Press.
Torkelson E (2020) Collateral damages: Cash transfer and debt transfer in South Africa. *World Development* 126. DOI:10.1016/j.worlddev.2019.104711.
Torkelson E (2021) Sophia's choice: Debt, social welfare, and racial finance capitalism. *Environment and Planning D: Society and Space* 39(1): 67–84.
Woods O, Bunnell T and Kong L (2023) The state-led platformisation of financial services: Frictionless ecosystems and an expansive logic of 'smartness' in Singapore. *Geoforum* 146: 1–9.
Zelizer VA (2012) How I became a relational economic sociologist and what does that mean? *Politics & Society* 40(2): 145–174.
Zhang L (2020) When platform capitalism meets petty capitalism in China: Alibaba and an integrated approach to platformization *International Journal of Communication* 14: 114–134.

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