« FinTech Urbanism : Infrastructural Transitions *from* the South »

Conférence de Liza Rose Cirolia

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Dossier pédagogique à destination des responsables de formation, des étudiants de licence et de master et des doctorants



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Conférence

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Amphithéâtre Bienvenüe

« FinTech Urbanism : Infrastructural Transitions *from* the South »

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Abstract : Over the past twenty years, urban studies scholars have sought to advance notions of southern urbanism in order to contest the exclusion of the global south in the generation of urban theory. This ecumenical community has generated a rich vocabulary to describe, valorize and make sense of the development of southern cities and the infrastructural arrangements they exhibit. In this lecture, I engage with the implications of these debates for studying financial technologies (FinTech) from the south. In Part 1 of this lecture, I will foreground the essential contribution and problematic tendencies of southern urban infrastructural scholarship. In Part 2 of this lecture, I will draw on collaborative research on Cape Town, South Africa, to provide a rich account of Cape Town's 'making' as the so-called FinTech Capital of Africa, presenting an alternative orientation and mode of de-scription than is commonly applied. I will close with a set of reflections on (southern) transitions and the sorts of worlded methodologies and equitable collaborations which might support this.



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Liza Rose Cirolia

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Liza Rose Cirolia est chercheuse principale au Centre africain pour les villes. Ses travaux portent sur la relation entre infrastructures hybrides et gouvernance, avec un intérêt particulier pour les transitions technologiques, l'art de gouverner en milieu urbain et les montages fiscaux. Elle travaille actuellement sur trois domaines de recherche, en grande partie en collaboration avec des collègues du monde entier :

Techno-worlding et spéculation. Ce travail comprend des projets sur l'innovation fintech en matière d'infrastructures numériques à Nairobi (Kenya) et à Mogadiscio (Somalie). Ces projets s'intéressent aux travaux technologiques mis en œuvre par le biais de plateformes et d'écosystèmes fintech émergents, en développant de riches informations empiriques sur les principaux acteurs et discours impliqués dans le changement financier et technologique dans les villes africaines.

Coproduction et traduction des connaissances : ce travail s'appuie sur deux projets financés par le Wellcome Trust, tous deux axés sur l'interface climat/santé et sur la création de connaissances transdisciplinaires et pertinentes pour les politiques. L'un des deux projets consiste à créer des « laboratoires urbains » au Ghana et au Rwanda. L'autre projet s'est concentré sur les quartiers informels du Cap (Afrique du Sud).

Redimensionnement des infrastructures et gouvernance urbaine : ce travail s'est concentré sur l'évolution des nouvelles technologies de prestation de services et sur la relation entre ces technologies et les questions de gouvernance urbaine. Ce travail se concentre sur Freetown (Sierra Leone), Kampala (Ouganda) et Le Cap (Afrique du Sud). Ce travail remet en question les débats existants sur le rôle des grands systèmes techniques en Afrique.

Bibliographie indicative :

Rose Cirolia, L., Pollio, A., Sitas, R., Fortuin, A., Odeo, J. O. I., & Gatoni Sebarenzi, A. (2024). Fintech 'frontiers' and the platformed motorcycle: Emergent infrastructures of value creation in African cities. Environment and Planning D: Society and Space, 02637758241276324.

Cirolia, Liza Rose, and Andrea Pollio. "Spectrums of infrastructural hybridity: insights from urban Africa for a propositional research agenda." Handbook of Infrastructures and Cities. Edward Elgar Publishing, 2024. 179-195.

Hermanus, L., & Rose Cirolia, L. (2024). Distributed energy technologies, decentralizing systems and the future of African cities. Environment & Urbanization, 36(1), 53-68.

Pollio, A., Cirolia, L. R., & 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.

Maina, M., & Cirolia, L. (2023). Ring roads, revived plans, & plotted practice: the multiple makings of Nairobi's urban periphery. Habitat International, 142, 102932.

Cirolia, L. R., Sitas, R., Pollio, A., Sebarenzi, A. G., & Guma, P. K. (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.

Cirolia, L. R., & Pollio, A. (2023, June). Queer Infrastructures: Objects of and Orientations towards Urban Research Practice. In Urban Forum (Vol. 34, No. 2, pp. 235-244). Dordrecht: Springer Netherlands.

Cirolia, L. R. (2023). Centering the 'Urban State' in African urban governance debates. International Journal of Urban and Regional Research (JURR).

Baptista, I., & Cirolia, L. R. (2022). From problematisation to propositionality: Advancing southern urban infrastructure debates. Transactions of the Institute of British Geographers, 47(4), 927-939.

Pollio, A., & Cirolia, L. R. (2022). Fintech urbanism in the startup capital of Africa. Journal of Cultural Economy, 15(4), 508-523.

Cirolia, L. R., & Harber, J. (2022). Urban statecraft: The governance of transport infrastructures in African cities. Urban Studies, 59(12), 2431-2450.

Cirolia, L. R., Hall, S., & 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.



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Bibliographie indicative :

CHOPLIN A., 2023, Concrete City, Material Flows and Urbanisation in West Africa, Wiley-Blackwell, IJURR-SUSC Series Book

CHOPLIN A. 2020 Matière grise de l'Urbain. La vie du ciment en Afrique, Genève : MétisPresses.

CHOPLIN A., PLIEZ O., 2018, La mondialisation des pauvres, Loin de Wall Street et de Davos, La République des Idées, Seuil

CIAVOLELLA R., CHOPLIN A., 2018, Cotonou(s), Histoire d'une ville sans Histoire, Cahiers de la Fondation Zinsou, IRD.

CHOPLIN A., OULD BAH M. F. (coord.), 2018, *Droit, propriété et foncier en Mauritanie*, Rabat, Paris : Centre Jacques Berque

CHOPLIN A., 2009, *Nouakchott au carrefour de la Mauritanie et du Monde*, Paris : Karthala-PRODIG, 372 p.

Andrea POLLIO & Liza Rose CIROLIA, « Fintech urbanism in the startup capital of Africa », Journal of Cultural Economy, 2022, 15:4, 508-523, DOI: 10.1080/17530350.2022.2058058

Abstract

From innovations in mobile money to bookkeeping devices, the burgeoning of financialtechnologies (fintech) in the Global South has been critiqued by scholars concerned with financialization, datafication, and recently, neo-coloniality. While sympathetic to these concerns, this paper argues for a more descriptive, ambivalent, and urban reading of the implications and stakes of this fintech boom. Using Cape Town as a case study, we explore how the city has become and positioned itself as a/the capital of fintech innovation in Africa. With two detailed vignettes that look respectively at the recent histories of business process offshoring in the city and at the cycles of experimentation that via Cape Town bring fintech to the rest of the continent, we make three arguments. First, that the urban state has been instrumental in shaping how fintech lands in cities and how the infrastructures which support it develop. Second, that diverse cultural economies of experimentation engender the worlding practices through which local fintech ecosystems operate. Overall, we suggest that paying attention to these different ways in which fintech is enabled and mobilized by the urban state opens a necessary research agenda into the ambivalence of financial innovation in Africa.

Introduction

In 2018, investment in tech companies in Africa crossed the billion-dollar threshold. A year later, venture capital (VC) directed to African startups almost doubled, reaching USD 2 billion (Partech Partners 2020). According to the most recent Tech Venture Capital report (Partech Partners 2021), Africa is the fastest growing VC region in the world. This capital rush is driven by startup companies that operate in the so-called 'fintech' sector. A portmanteau of 'financial' and 'technology,' the word 'fintech' captures a diverse array of technologies that innovate the delivery, management and outreach of financial services such as credit and insurance. Although fintech, and the associated development discourses of financial inclusion¹, is constituted through a much wider, deeper, and more ambivalent set of processes than merely capitalization of startup firms by VC, these statistics are nonetheless revealing, as they illuminate what the capital market recognizes as the most promising high-growth companies in Africa.

Current social science scholarship on fintech, according to Langley and Leyshon (2021), has addressed two interrelated aspects of its emergence: the financialization of daily life through various forms of 'datafication' enabled by digital technology (e.g. O'Dwyer 2019); and the infrastructural configurations of fintech, which extend beyond the domain of innovative or disruptive technology, into legacy financial architectures and mundane technical systems (e.g. Bernards and Campbell-Verduyn 2019). These two strands of scholarship map onto Africa-based research with two kinds of foci: a 'frontierist' critique, charting how fintech enables new forms of enclosure and accumulation in African economies, often along enduring colonial traces (Bernards 2022); and a more relational 'science and technology' (STS)-inspired

perspective, exploring the diversity and the hybridity of the infrastructures enrolled in the functioning of Africa's new financial systems.²

In this essay, we build on this second perspective and chart the making of a fintech ecosystem in a city – Cape Town – that has emerged as one of the key startup hubs of Africa. We ask: how has Cape Town become a central node in the cultural and economic circuits of fintech in Africa? Or more bluntly, what makes Cape Town one of the fintech capitals of Africa³? Our aim is to complement existing accounts of African fintech (e.g. Bernards 2019) with a perspective attentive to the role of the urban state in producing both hybrid digital infrastructure and the urbanization of cycles of experimentation and consolidation upon which financial technologies rely (Langley and Leyshon 2021). To do so, we bring into dialogue scholarship on urban statecraft in (South) Africa with the notions of 'startup urbanism' (Rossi and Di Bella 2017), and thus develop an STS-inspired analysis of the urban infrastructure configurations that support a 'startup city' like Cape Town in producing, experimenting with, and worlding⁴ fintech. In particular, we take a cue from Mavhunga's invitation (2017) to consider how technology is produced and tested in Africa. This pushes our inquiry beyond a critique of the neocolonial and capitalist facets of financial inclusion (Mouton and Burns 2021) and allows us to foreground the role of the urban state in the cultural economies of African fintech.

To substantiate this contribution, we craft empirical vignettes articulating two core processes that have shaped and continue to configure Cape Town's simultaneous grounding and worlding in Africa's fintech: the development of cloud and broadband infrastructure; and the continental reach of acceleration programmes and Africa-focussed ICT4D (ICT for development) startups which use Cape Town both as a base and as a testbed to latch onto wider African economic networks.

Methodologically, these vignettes reflect a synthesis of several projects undertaken between 2015 and 2019, involving interviews with coworking space hosts, incubator and accelerator managers, venture capitalists, social enterprise startup founders, programmers and coders in the sector, and ethnographic work at tech conferences, hackathons, business schools, and workshops. This work also reflects informal conversations with experts involved in various aspects of the finance and technology interface, for example, people working at Cape Town's many call centres, startups, and social enterprises. These sector-tracking activities were complemented by reviewing online policy documentation (both on open repositories and on government intranets), blogs and posts related to the tech sector, news articles, and promotional material for various companies.

The empirical vignettes simultaneously speak to the three core arguments of this article. First, that the fintech phenomenon, and startup economies more broadly, are not simply happening to cities, but are deliberate and laborious creative processes, in which ambivalent infrastructures are engendered to multiple economic and political agendas of the urban state. Using the entwined histories of Amazon's cloud computing and the city business process offshoring sector, we make a case for not seeing Cape Town, either city or metropolitan government, simply as a recipient of fintech urbanism as a 'startup city' model from elsewhere. Rather, the latter should be read as an ambivalent infrastructural project of the local developmental state's attempt at redressing economic segregation while seeking to attract global and local capital through the possibilities of labour offshoring.

The second argument of this article is that, particularly when looking at some of the instantiations of startup urbanism – such as acceleration programmes and urban fintech testbeds – both the design and experimentation of these technologies appear to enrol ambivalent desires and diverse worlding practices. By 'de-scripting' (Akrich 1992) some of the processes of what we call 'Made in Cape Town for Africa,' the

second vignette of the essay shows the multiplicity of fintech technologies that from the city operate at continental scales. We recognize that some of the stories that we recount are not just about fintech startups, but may apply to the city's tech ecosystems more broadly. Moreover, fintech innovation depends on additional urban configurations, such as retail and migrant networks (Cirolia et al. 2022), which we only briefly mention in this paper. However, not only did our informants specifically use the fintech sector as a litmus test of broader trends in the local tech ecosystem, including the boom of the cloud industry in South Africa which we discuss later, empirical data also shows that in the African context the majority of tech investments has been indeed directed towards fintech startups (e.g. Partech Partner 2021).

Finally, in foregrounding the role of these experimental startups, and how their continental expansion has been supported by the local urban state, our paper makes the case for moving beyond the binaries of, on the one hand, unbridled techno-optimism and, on the other, cynical technopessimism that sees fintech users, and, we argue, also fintech producers, as pawns of global capitalism. This is not just a case for re-stating the complexity of the fintech phenomenon in Africa, but also for recognizing the diverse infrastructural agencies and experimental practices that may orient and align technological innovation to emancipatory intentions.

Startup urbanism and fintech infrastructure in Africa

To ground this work, we bring into dialogue scholarship on urban statecraft in (South) Africa, which we cover in section 2.1, with the notions of 'startup urbanism' (Rossi and Di Bella 2017), 'urban entrepreneurialism 2.0' (Rossi and Wang 2020), or the 'startup city' (McNeill 2017, Zukin 2020a, 2021), covered in 2.2. In different but related ways, this literature points to the importance of understanding the mutual constitution of technological infrastructure and the urban state.

Urban statecraft : infrastructure and state formation at the city scale in Africa

Beyond the more apparent role played by urban authorities in the delivery of infrastructure in African cities (Smit and Pieterse 2014, Pieterse 2019, Marrengane 2021), significant scholarship has addressed how urban infrastructure is also enrolled in state-formation at the urban scale (Cupers and Meier 2020; Cirolia and Harber 2021). In other words, infrastructure – such as ICT or energy – can be seen as a site of urban statecraft. Croese (2018), for example, charts how the Dubai-style waterfront developed for the Bay of Luanda operated to consolidate and perform state power in Angola's capital city. Terrefe (2020) shows us how mega-transport projects in Addis Ababa provide the material and discursive context to extend political party power in Ethiopia's capital city. Doherty (2019), reflecting on Kampala, maps how the municipal authority uses garbage collection and beautification to understand itself.

The urban state, as these scholars have argued, is not conflatable with local governments or municipalities. In the African context, where conflicted and partial decentralization (Resnick 2021) has left urban states fractured, the state is made through and of its relations. National sectoral departments, regional authorities (such as Provinces, in the case of South Africa), corporatized utility companies, and many other arms (and maybe legs) of the state compete for power over urban spaces (Cirolia and Harber 2021). As such, the making of the urban state can be found at the intersections of these multiple authorities and scales of territorial mandates and infrastructural materializations. In Cape Town, compared to other cities in Sub-Saharan Africa, the local government has considerable control over key aspects of urban investment; however, this does not dilute the relational reality of urban statecraft (Palmer et al. 2017, Cirolia and Robbins 2021).

While urban statecraft is a relatively new discourse in the (South) African urban studies debates (as it is within urban studies, see Pike et al. 2019), there is a long lineage of scholarship that explores the often contradictory tendencies within the South African state between being developmental and

entrepreneurial (Parnell and Pieterse 2010). Undeniably, the design of multi-level government in South Africa, and the many tools and instruments granted to sub-national governments (e.g. local and provincial spheres) to realize the progressive post-apartheid promise, reflect a commitment unprecedented on the continent.⁵ However, most of these important developmental efforts have fallen short of delivering on their economic and spatial justice intent. Institutionalized through clunky bureaucracies and enmeshed with debilitating political battles, Cape Town remains a city fraught with challenges. Some of these challenges have been captured by scholars concerned with the entrepreneurial and neo-liberal turn in urban governance at large. In the face of austerity and fiscal stress, and underpinned by implicit racist and classist legacies, larger South African municipalities have in fact pursued entrepreneurial programmes at the local and global level. City-branding exercises which promote Cape Town as a creative-city, a techcity, and a city which is well run with clean audits and clean streets, are cases in point of this neoliberal restructuring of urban politics (McDonald 2012). Positioning itself to compete with other cities in South Africa and in the world for global investment, access to finance and various other accolades, the urban state often operates at the expense of more ambitious projects of redistribution and transformation.

While it is not the purpose of this paper to establish whether Cape Town's urban governance is either entrepreneurial or developmental in nature, the blossoming of a local fintech ecosystem (and a tech startup scene more broadly), we argue in what follows, needs to be understood in relation to the contradictory impulses and expressions of local statecraft (Parnell and Robinson 2012). It is with this in mind that we turn to the question of startup urbanisms – a mode of urban governance sitting at the intersection of developmental and entrepreneurial urbanism, public and private forms of capitalization, and many different infrastructural layers.

Startup urbanism and silicon savannahs

Before the global financial crisis of 2008–2009, the clustering of technological companies was rarely seen as an urban phenomenon (Zukin 2020a). This has changed in recent years, with cities playing an increasingly important role for the tech economy. Sociologist Sharon Zukin links this shift to what she describes as the 'innovation complex' – an emergent infrastructural matrix of buildings, research labs, coworking spaces, data infrastructures, hackathons, lobbying groups, universities, urban development agencies and economic policies, brought together by a discourse that has been promoting technological entrepreneurship as a solution for value-creation in cities hit by financial stress and deindustrialization (Zukin 2020b).

The policies supporting the progressive urbanization of the 'innovation complex' have been variously termed as 'startup urbanism' (Rossi and Di Bella 2017), 'urban entrepreneurialism 2.0' (Rossi and Wang 2020), and more broadly as the 'startup city' phenomenon (McNeill 2017, Levenda and Tretter 2020) – with the argument that this trend ultimately represent a neo-liberal, neo-developmental reinvention of older forms of entrepreneurial urbanism. In other words, startup urbanism replicates a long-standing alliance between urban statecraft and capitalist interests, with the aim of forging new, high-tech forms of accumulation. For reasons of space, we cannot go into the details of and give justice to this debate. What is relevant for this paper is the fact that scholars in this field recognize that startup urbanism, while aligned with the entrepreneurialization of city governance, and with competition to attract scarce forms of capital, such as VC, is also a variegated phenomenon with many fault lines and in which tangible infrastructures are important sites of urban statecraft, as shown by Zukin (2021) through the parable of New York's tech ecosystem.

Yet, while New York is a paradigmatic case of 'planetary Silicon Valley' (Zukin 2021), it is hardly the only city to have engineered an 'innovation complex'. Thanks to performative practices such as place branding (Nathan et al. 2019) and inward identity building (Gill and Larson 2014), Silicon cities have proliferated across the world, including in Africa, where Cape Town's Silicon Cape, Nairobi's Silicon

Savannah, and Lagos's Yaba Valley (or Silicon Lagoon) are among the bestknown tech clusters. These cities, with few exceptions, have not been considered in the startup city debate, yet they show a growing concentration of infrastructural investment, tech companies and VC directed to them. As acknowledged above, VC is a significant crucible of startup urbanism: not only is it a decidedly urban phenomenon (Florida and Mellander 2016, Pan et al. 2016), it also foregrounds what investors see as the most promising, high-growth areas of technological innovation (because of its high-risk/high-return nature).

Although the slice of global VC directed to Africa remains small, VC is expanding at a faster rate in urban Africa than anywhere else in the world, particularly for the fintech sector (Partech Partners 2021). From mobile money, to bookkeeping, to blockchain-based, sharia-compliant credit services, to remittance mobile-phone apps and financial hardware for informal traders, a few African cities have become both testbeds and generators of these technologies. This centrality of the urban, we argue, is an underexplored aspect of the fintech revolution in Africa, as most scholarship that addresses the political economy of techmediated financial inclusion in the Global South focuses on the financialization of development (e.g. Gabor and Brooks 2017, Mader 2018, Bernards 2019), or, conversely, on the cultural-economic diversity of the drivers that shape new financial technologies (e.g. Maurer 2012).

It is for this reason that in this essay we consider startup urbanism as an exemplary site of the contradictions of the urban state in Africa, whereby developmental and entrepreneurial rationalities concurrently shape the cultural economies of financial innovation. In doing so, we respond to the call made by scholars of the urban state to pay more detailed attention to the infrastructural formations that underpin the cycles of experimentation and consolidation through which certain urban economies take hold as matters of local statecraft. We therefore embrace a technopolitical sensibility to the study of urban infrastructure, a perspective in which technical systems appear in their heterogeneity (Furlong 2014, McFarlane et al. 2017, Amin and Cirolia 2018), and in their inherent ambivalence (Von Schnitzler 2016), operating in what Vally calls 'a plural terrain of politics' (2016, p. 996). It goes without saying that these insights apply not just to traditional urban technical systems – water, sanitation, energy and the likes – but extend to seemingly but not less material digital and media ecosystems, which too emerge as a combination of diverse, heterogeneous infrastructures (Larkin 2013; Guma and Monstadt 2021, Aurigi and Odendaal 2021).

However, as Mavhunga has pointed out (2017), in the study of digital infrastructure and more broadly in the study of science and technology in Africa, there has been a tendency to focus on how people or places 'receive' new tech as part of colonial and neocolonial projects, and appropriate it in ambivalent ways (e.g. Burrell 2012, Breckenridge 2014, Hecht 2014). But technical systems are also made and remade in Africa. In this sense, we are inspired by Mavhunga's claim that technology is constituted in Africa too, and that ambivalence should not just be located in the user side, but also in the diverse, overlapping – not just technical – rationalities that forge infrastructure from the designer or policy side. In many ways, such an approach echoes a long-standing STS mode of reading technology, which Akrich (1992) famously described as 'de-scription'. Such epistemic strategy involves looking at the many narratives, desires, and purposes that are materially inscribed in technologies. Obviously, this strategy does not need to be limited to single artefacts, but usefully extends to infrastructural systems, which too can be tentatively de-scripted:

If we are interested in technical objects and not in chimerae, we have to go back and forth continually between the designer and the user.... Between the world inscribed in the object and the world described by its displacement...the notion of de-scription [...] is the inventory and analysis of the mechanisms that allow the relation between a form and meaning constituted by and constitutive of the technical object to come into being. (Akrich 1992, pp. 208–209)

In what follows, we articulate this inventorying analytical strategy using the startup city as a vantage point – with two possible de-scriptions of how Cape Town operates as a fintech capital in the African continent – to map both the role of the urban state and its worlding experiments in the making of fintech.

Two de-scriptions of fintech urbanism in Cape Town

Of the many, emerging African 'silicon locales' hosting fintech companies, capital and startups, the case of our paper is Cape Town, South Africa's second-largest city and legislative capital. Located on the south-westernmost peninsula of the African continent, and scarred by a long, unended history of imperial circulations, forced removal, and market-led displacement, Cape Town remains today a very unequal city, with a diversity of urban typologies mapping onto older patterns of racial segregation: from colonial homesteads to glitzy waterfront condominiums attracting global investment, to informal shack settlements, to older townships developed to realize urban apartheid. The coexistence of such different urban spaces has been the object of planning and economic development policies, but it has also engendered experiments with technological solutions that seek to bridge these urban divides (Pollio 2020b). As we will explore below, the fact that Cape Town boasts one of, if not the, largest fintech ecosystems in Africa is contingent on both the city's highly developed financial infrastructure and the possibility of using areas of poverty to test and consolidate fintech solutions that can then be exported across the continent.

An early entrant in Africa's digital economy (Pollio 2020a), Cape Town was the first of only three African cities to be featured in the Startup Genome survey, the most important global ranking of startup cities (McNeill 2017). At the time of the ranking, Startup Genome reported that Cape Town had the largest number of tech startups in Africa (Startup Genome 2017). This narrative was later adopted by the city government, the Cape Town Metropolitan Municipality (the City), and by the Western Cape provincial government (the Province), which produced a large volume of promotional materials to showcase Cape Town's primacy in a series of innovative sectors, particularly fintech, edtech and enterprise software.

One of the reasons for Cape Town's ascendancy as a startup city, as argued elsewhere (Pollio 2020b), was the success of Cape Town's business process offshoring industry (BPO), from the late 90s onwards, built from the alliance between the private sector and the urban state. This is what we explore in the first vignette, charting how the recent history of cloud computing shows the incidental and yet crucial role that Cape Town played in generating the infrastructural backbone of its fintech ecosystem.

The second vignette is more specifically about fintech startups that have chosen Cape Town as their home. Our focus is on what we describe as the 'made in Cape Town for Africa': processes through which the local fintech sector operates at a regional scale that goes much beyond the city and the country. In fact, many of the financial inclusion technologies developed in Cape Town, while tested in the city's poorest townships, only become economically viable when expanded to the rest of the continent. The processes which we highlight in the vignette include remittance flows, the experimentation of fintech technologies using Cape Town as a testbed, and finally the acceleration programmes through which early-stage capital (including venture capital) is funnelled to fintech companies that through Cape Town operate across the continent.

The cloud, BPO and broadband infrastructure

While the origins of cloud computing cannot be ascribed to a single location or company (Hu 2015), the history of commercial cloud services is inextricable from Amazon's evolution from an online bookstore to one of the largest technology companies in the world. In the early 2000s, Amazon was just an online retailer that had survived the tech burst operating at very low margins. By the late 2000s, however, the company had become the world's most important provider of cloud computing services, with

its subsidiary AWS granting other companies and individual customers the possibility to offshore computing tasks that would be too complex, too 'slow,' or too expensive on a single computer or server. As of 2021, AWS is still the world's largest commercial cloud, its market surpassing the combined share of its two main competitors Microsoft and Google (SRG 2021). Underpinning AWS services is the Elastic Compute Cloud (EC2), a software architecture which allows users to rely on a virtual cluster of computers, for both storage and computing.

Launched in 2006, EC2 was the brainchild of Benjamin Black's and Amazon's VP of engineering Chris Pinkham's, who in 2003 had presented a co-authored concept paper to Amazon's founder Jeff Bezos, laying out the possibility of using and selling virtual servers as a business (Black, n.d.). It is then that the story of Amazon's AWS had crossed the oceans between Seattle and Cape Town. Chris Pinkham was not new to the technology ecosystem of the latter city, where he had moved as a child and then attended university. In the early 90s, while South Africa was reemerging from years of isolation under the apartheid regime, Pinkham had launched Internet Africa, South Africa's first-ever Internet service provider (ISP), defying the telcom monopoly that still existed at the time. In fact, Internet Africa and other Cape Town-based ISPs became the vanguard of the fight for broadband liberalization that marked the transition from apartheid to a liberal democracy in the telecommunication space (Horwitz 2001). Over the decades that followed, these pioneers of the South African Internet advocated for increased broadband infrastructure and cheaper connectivity prices (Pollio 2020a). After selling Internet Africa to MTN, then a small company poised to evolve into Africa's largest telcom. Pinkham worked as Amazon's VP of engineering for several years and then decided to return to Cape Town for family reasons.⁶ In order not to lose Pinkham's talent. Bezos allowed him to form a team that would work on the cloud concept he had presented earlier on, and opened an Amazon Development Centre in Cape Town.⁷

As a location, Cape Town was favoured by three important colonial legacies: the English language, a lower labour cost, and a top-notch university with a great engineering programme, as attested by many University of Cape Town graduates who had by then become famous Silicon Valley 'argonauts' (Saxenian 2007). Among them were a few members of the so-called Paypal Mafia, and the co-creator of the world's first commercial web browser, Willem van Biljon, who also became part of the Cape Town's team that developed EC2. Later on, Pinkham and van Biljon went on to found another cloud startup, Benguela. With a name inspired by the cold ocean current that from Angola reaches the shores of Cape Town, Benguela replicated the same offshored geography that Pinkham and van Biljon had learnt from Amazon: headquarters in Silicon Valley, where venture capital was raised⁸, and a development centre in Cape Town, where its software engineers launched an alternative cloud service to EC2. Ephemeral like many startups can be, Benguela was soon sold to Oracle, which used it as a blueprint for its own cloud.

While this short corporate genealogy of Amazon's EC2 foregrounds the coloniality of digital technologies in Cape Town, and the role that big tech companies play in these processes, we argue that Amazon's presence in the city should be also read against the backdrop of the urban state's desire to be a hub for tech innovation, particularly through its support for the BPO sector. In fact, by the time Amazon opened its offshored development centre in Cape Town, the city had already become a destination for business process outsourcing, and several call centres of global corporations – from Lufthansa to Shell – had already opened their doors to hundreds of customer service operators.

Although the accomplishment of EC2, and the successes of other software companies developed in Cape Town, such as Verisign and Yola, were told as stories of unexpected, off-the-map technological innovation, the city had been busy building the infrastructural foundation to become a global BPO destination. In a series of moves that involved the municipal, provincial government, and national government (for example the liberalization of VOIP services in 2005), support for BPO had been gradually enshrined as a key developmental mandate of local economic policy. The rationale was twofold: BPO would easily yield decent-paying customer-service jobs in a region battling with extremely high unemployment rates, simultaneously generating opportunities for entrepreneurs to start up their own BPOs in more complex areas, such as telemedicine, legal and IT services.

Incidentally, voice-service BPOs relied on similar colonial heritages that made Amazon's move to Cape Town smooth. Not only was the city conveniently located in relation to central time zones, so-called 'accent neutrality' was too cited as one of the competitive advantages for preferring South African rather than Indian voice services, despite the slightly higher labour cost (e.g. Mills 2006). Leveraging these seemingly natural advantages, the local government formed an alliance with the private sector, and against the national government-controlled Telkom's monopoly (Pollio 2020a). One of the key constraints for BPO companies was indeed the high cost of communication (for voice and data). Both liberalization and infrastructure investment were therefore advocated by the various representative organizations that were formed as BPO lobbies and by local government bodies. Eventually, fledgling steps taken towards infrastructure availability showed exceptional results. Between 2003 and 2006, the year in which Amazon announced its EC2, the Cape's jobs in the BPO sector had more than doubled (Mills 2006).

During this time, the local government and the BPO industry kept asking a series of infrastructural questions: who should manage connectivity infrastructure and how? Could the broadband of submarine cables be allocated differently, between national and provincial levels? Could non-market, developmental tariffs be applied to BPO that created enough jobs? Could a local government entity own a telecommunication network? These questions of urban state-making were addressed implicitly and explicitly in numerous reports and white papers that municipal and provincial authorities published in those years, showing how these institutions saw ICT as a testbed to local developmental policies. Supporting infrastructures obviously extended beyond the physical network of connectivity, with both the city and the province providing government-owned buildings to BPO firms at subsidized rates, but it was the incremental expansion of broadband that became the backbone of the city's double regional advantage as a BPO hub and as Africa's startup capital.

Many of the underlying factors shaping the BPO drive to Cape Town were exogenous, but failing to acknowledge the active role of the City and the Province is a mistake. Policy documents produced by various levels of government between the late 90s and the mid-2010s show that broadband infrastructure, as a matter of developmental statecraft, was seen as an investment that would build the local government's capacity to foster economic growth through what was then described as the 'knowledge economy'. While the City and Province were obviously hoping to attract sophisticated offshored services in due course, and Amazon's development centre became a tangible example of their success, their primary objective had been to foster the creation of decent paying jobs for a less educated workforce (author 2020). Still recently, the municipal agency in charge proudly reports that half of the jobs created in the city in 2018 were in the BPO business.⁹

Moving forward, the City intends to continue to direct and even control investment. As new undersea cables are poised to shore in the city in the coming years, multiplying the landscape of providers that connect southern Africa to the Internet, the municipality has become an infrastructure operator itself, rolling out one of the world's first city-owned fibre networks, which can be used and aligned to specific economic and city-planning strategies. In the meanwhile, the city already offers services such as data centre co-location in their switching centres, and other cloud services that streamline the connection between its own and other private network infrastructures. To harmonize and outwardly promote these investments, a platform called Invest Cape Town has been created. Through this platform, once again, the City is explicitly linking the BPO and the tech sectors as a matter of policy. Having become a cloud infrastructure operator itself, the City of Cape Town can now use cloud pricing and locations to orient job creation and pursue its developmental mandate, using the startup city as an overarching narrative that

frames both soft and hard policies. This platform is also linked to the provincial authority for trade and tourism (WESGRO), which operates as a trait-d'union between the city and the national government, for example lobbying for the enactment of a startup visa programme that would benefit Cape Town as a destination for remote workers and startup founders (personal conversation, Nov 2019).

What we begin to see, with these recent infrastructural histories, is that the development of broadband has been a variegated process¹⁰, blending the personal biographies of Silicon Valley returnees, 'big Tech', the BPO sector, the early commercialization and privatization of the internet, and an attempt by the city's government at using digital infrastructure for local development. One of these tangible infrastructure of the startup city – the fibre-optic broadband network – was also a site for the urban state to see itself as much more than a regulator and experiment with infrastructure-driven economic and job growth.

While broadband laid the literal groundwork for Cape Town's purported primacy in the startup economy, obviously this is not the sole possible explanation of Cape Town's regional advantage in fintech, as the startup economy extends much beyond the fintech ecosystem itself. However, it has been in the fintech industry that Cape Town's most recent successful startups have expanded to the rest of South Africa and to other countries: examples such as Jumo (perhaps Africa's most famous fintech company – see Langley and Leyshon 2022), Nomanini, Yoco and Snapscan are cases in point. These extremely successful companies rely on existing broadband infrastructure, concurrently creating the demand for additional investment, particularly in cloud services. Circling back to Amazon, in 2020 AWS launched its first African cloud, with a couple of data farms that went live in Cape Town in the early days of the Covid-19 pandemic, almost two decades after opening their first development hub¹¹ in the city. Having a local cloud node means that fintech startups like Jumo, which relies on outsourced computing capacities, can now access better services and with less latency. As we move to the next section, we begin again with Jumo, a company that from Cape Town enables far-away financial transactions across many other countries in the continent and beyond.

Made in Cape Town for Africa

Having started as a financial inclusion startup, providing a mobile wallet to unbanked people with no collateral, Jumo is now a cloud-powered fintech company with a footprint across the continent. Operating from the hilly, leafy Cape Town suburb of Gardens, Jumo's headquarters sit just across the road from Amazon's development centre, overlooking Cape Town's harbour. Seemingly incidental connections between Jumo and Amazon do not end there. Chris Pinkham, who was once involved in the development of Amazon's EC2, became a member of Jumo's board in 2017. In an interview at the time, he reflected on the startup and its relation to cloud computing available in the city:

They're a very cloud-centric company. They rely very heavily on the public cloud services available to them. Philosophically, it works very well for an emerging market company who is situated very remote from the technology centres of the world. To have access to these world-class infrastructure facilities.¹²

However, although these financial innovations are emanating from Cape Town, where Jumo is located, the social and economic issues of financial access that the company wishes to solve are problems across the continent, with limited (or quite specific) applicability to the South African urban context. Many financial inclusion innovations aim to fix broken or limited banking and borrowing systems, evident in much of Africa.

In contrast, Cape Town, like South Africa overall, has strong banking infrastructure, with higher levels of formal access than most places on the continent. This reflects the highly regulated domain of South African financial institutions as legacy systems, as well as the strong push in the post-apartheid period to address financial inclusion (James 2014). There has even been innovation in the conventional

banking sector confronting the often high cost of banking for the poor; Capitec Bank is now one of the leading banks serving low-income clients, minimizing banking fees by focusing on ATMs, linking with supermarkets, and using online platforms. While many of these innovations have been critiqued for producing financialized subjects, steeped in costly debt (Torkelson 2021), big banks' penetration has had discernible impacts. For this reason, fintech innovations designed for unbanked customers, such as mobile money and e-wallets like M-Pesa, have struggled to find a market in South Africa (Finmark Trust 2017, Mothobi and Grzybowski 2017).

Given how financially unique Cape Town is in the context of Africa, then, how do financialtechnology companies place themselves in Cape Town when they want to serve the continent more broadly? This question needs not present itself with the reductionist tendency to question the 'Africanness' of Cape Town, or replicate the problematic trope of South African exceptionalism. Instead, it begs us to understand how Cape Town is coming to the fintech 'world' through relational, specific, and multigeographical practices of innovation. Below, we identify three ways in which this worlding takes place. First, we look at innovations which link Cape Town to the continent; second, we look at innovations which are first tested in Cape Town's informal areas, before being mobilized for other African urban contexts; and finally we look at how Cape Town hosts Panafrican accelerator programmes which train fintech entrepreneurs and connect them to larger capital ecosystems.

Innovations that connect

Remittances are an interesting example of fintech innovations aiming to link Cape Town to the continent, through flows of money. In 2016, 43% of the remittances received within sub-Saharan Africa came from other African countries, of which South Africa was a dominant sender (CENFRI 2018) despite the fact that 'intra-Africa remittance corridors have the highest cost of transmitting remittances' (Mudungwe 2017, p. 12). It is also widely acknowledged that the legacy systems and technologies on which formal transnational transactions rest are now outdated (Gomber et al. 2018). So too is the Western Union model, which has a vast and diffuse franchise in almost every African country, leading to high fixed costs. These problems have been met with a siliconvalleyan 'disruption' mentality (Geiger 2020); fintech startups are driving costs down and challenging existing financial patterns. In Cape Town, MamaMoney, Mukuru, and similar companies, make their money on very small margins, with a lean and flexible approach. They deploy partnerships between banks, retailers and cell phone companies in strategic ways to reduce costs through competition and agility.

As the founder of MamaMoney explained:

We are consciously a partnership-based model...that's our DNA. We don't want to own the entire value chain...because we've been going for a while, we have three partners in [each African] country we work with. So we say to them listen, you can't charge us this much because otherwise we'll direct the traffic elsewhere ... we create some competition (interview, June 2020, Woodstock, Cape Town)

These remittance startups are a core component of the fintech innovation systems. Not only do they disrupt legacy financial systems for trans-national money transfer, they create new and diverse digital and financial pathways between Cape Town and the rest of the continent.

Testbed experimentation

In this context, Cape Town has not only positioned itself as a fintech leader by developing unique financial technologies which originate financial flows, but also as a centre where fintech innovation is tested. These tests provide proof of concept to unlock funding for continental expansion. Like other South African urban centres, the city is marked by notoriously high levels of inequality. As previously discussed, the long histories of colonization, apartheid, and post-apartheid investments have resulted in a highly divided urban fabric. While the city centre – Waterfront and surrounds – are globally renowned holiday

destinations, the peripheral low-income suburbs reflect a very different set of experiences and challenges. Cape Town's so-called townships and informal settlements are used as real-life experimental microworld for fintech ideas.

A good example of these testing practices is the corporate profile of Spaz.up¹³, a company whose founder and CEO we interviewed in late 2019, in the fashionably gritty townhouse that hosted a French government-sponsored technology incubator for social startups. Spaz.up developed a mobile phone platform that allowed spaza shops (informal convenience stores) to compare and buy wholesale from various providers. They then added a logistic management system, which was also tested in Cape Town's townships. By the time of the interview, Spaz.up had more than 5000 spaza shops registered on the app, an exponential growth rate of deals, and, more importantly, they were ready to become a fintech operation, thanks to the cloud of financial data recorded in each transaction. In other words, the CEO explained, end customers would be able to access credit services based on their track record of weekly and monthly expenses (interview, Nov 2019).

Spaz.up, while currently located only in South Africa, hopes to expand their offering in other countries. As the CEO revealed during the interview, the growth of the company, and its capacity to use Cape Town's townships as testbeds of future expansion plans are core to the longer term vision. Perhaps anecdotally, this fintech company is an example of the many offerings that are first tested in Cape Town with hopes of global expansion. The rapid growth to date of Spaz.up had depended on the role that acceleration programmes had played in the early phases of Spaz.up. These programmes, the CEO explained, had offered more than just seed capital, office space, cloud computing and other in-kind services: they had provided Spaz.up with a network of other fintech companies, including more established ones which enabled various forms of mentorship, and with the financial leverage to actually conduct the testing phase in the townships. It is in these networking operations that the role of the urban state shores up again.

Accelerator programmes

Accelerator programmes are indeed another example that links Africa-wide circulations of fintech ideas, people and capital to specific alliances between the local tech sector and the urban state in Cape Town. To give a sense of the prominence of these initiatives, at the end of 2020 the Silicon Cape organization surveyed more than 25 accelerators and incubators that had recently been active in the city. Startups like Spaz.up or MamaMoney would normally attend more than one of the programmes, in their first, very mobile years, gaining the possibility to survive in conditions of early market-failure, as well as access to mentorship and testing opportunities across town. For example, the oldest technology incubator in Africa – the Bam – features two separate buildings, with their respective initiatives: one in a converted warehouse in the up-and-coming Woodstock, a suburb that functions as Cape Town's creative hub, and one in Khayelitsha, one of the city's largest and poorest township, in a building that, a few years ago, became the first to be reached by an underground fibre cable that brought fast connectivity beyond the borders of rich suburbs (author 2019).

The Barn is run by CiTi, a not-for-profit public-private partnership which exemplifies Cape Town's capacity to see itself as an international startup hub. Not only is it a partnership of different governmental institutions, including the City, the Province and other government departments, such as the Job Fund, it also operates to align government and the private sector around specific areas of innovation that promote the city's competitive edges in the use of digital technology for social inclusion. Among CiTi's programmes operating at a continental scale, fintech is a central focus, through the Fintech Open Innovation Cluster, whose first member in 2015 became the Barclays Accelerator. A bank-sponsored programme open to fintech startups across the continent, the Barclays incubator brought Techstars, the world's largest, most famous franchise accelerator, to Cape Town, a first in Africa, and used it as a base to promote financial

innovation around the rest of the region. Not long after, the World Bank followed suit, with its XL Accelerator in 2017. With a similar structure, XL featured a panafrican selection of promising startups, and a training camp in Cape Town, where the winning teams met the VC funds that had partnered with the World Bank.¹⁴ XL is perhaps a unique case, because of the multilateral involvement of the World Bank, but it is one among many similar accelerators (Pollio 2022), which engineer the 'made in Cape town for Africa' fintech pipelines.

The case of CiTi showcases how an initiative of the local urban state has operated as a blueprint for these accelerated pipelines of fintech development, by conjoining VCs, financial corporations, blossoming startups, global tech companies like Amazon and Google, and support from different levels of government, from the provincial chapter of the national job fund to sectorspecific authorities. VC funds use these accelerators to de-risk early-stage investment. Banks and insurance companies, as corporate sponsors, get first-hand access to fintech innovation that they may purchase.

Through these accelerator programmes, African startups get knowledge, mentorship, networks, and the possibility to meet venture capitalists, whom, without travelling to Cape Town, would have been hard to access. Given the availability of specialized legal services, fintech startups also often use the city as a base for early incorporation, aided by province- and city-run agencies such as WESGRO and InvestinCT. These and other local agencies are, in fact, sponsors or cosponsors of many of these accelerators. A different form of sponsorship, on the other hand, comes from companies like Amazon, which offers fintech startups free trials of their cloud services through a mechanism that nurtures the next generation of cloud users across Africa. As fintech companies grow, so does their need for cloud infrastructure, especially for fast computing for data analytics and additional security products to protect their customers. Throughout these pipelines, the alliance between the urban state and the private sector is forged as a matter of statecraft, one where worlding the city's edge as a fintech capital in Africa orients the way in which Cape Town 'sees' itself and its infrastructures in relation to financial innovation across the continent. These are more than just acts of 'de-risking' financial inclusion (Gabor 2021), but operations through which local authorities build their seat at the table of African fintech.

In summary, these 'made in Cape Town for Africa' processes highlight, once again, the complex, relational systems which animate a local fintech ecosystem with panafrican ambitions – each small in their own right, but fundamental to the making of a robust and ever-changing entrepreneurial fabric. By highlighting three different ways this world-making process happens, we can see how interconnected and distributed these modes of financial innovation are, and how, ultimately, they link back to the inextricable lattice of entrepreneurial and developmental statecraft. In fact, the need to attract international capital and foster profit opportunities coexist in these worlding practices with significant localized and relational value: from cheaper remittance rates for South Africa-based migrants, to emergent financial products which in fact ease spaza shop marginal economies, to resources for local entrepreneurs to build businesses, to the opportunity for many African startups to experiment and survive in conditions of market failure, thanks to the acceleration programmes that enrol them. In the concluding remarks that follow, we will thus focus on the implications of a careful reading of these different scripts of fintech urbanism.

Conclusion

In this article, we narrated two processes which have shaped and substantiated Cape Town's positioning as a fintech capital of Africa. The first de-scription focused on the rollout of broadband and cloud infrastructures, which have supported ICT development in the city. We showed how the development of Amazon's cloud in the city, and the concurrent drive of the government to attract BPOs locally in order to create lower skilled jobs, provided the infrastructural foundation onto which fintech startups hinge and grow. Linked to this, and building on Cape Town's infrastructural backbone, we charted

some of the processes through which fintech innovations are launched, experimented, and resourced in Cape Town, coalescing to position the city as central to a continental development project. These fintech innovations not only depend on the existing infrastructure, both the financial and the broadband ones, but concurrently create the demand for their expansion and integration. There are, of course, many ways to read and make sense of these two interlinked processes. The dedicated critic may sustain scepticism of the development project generally, and particularly of the sort of techno-optimism celebrated by the fintech version of the 'bottom of the pyramid' development mantra.

These critiques are vital. However, we would like to suggest that these readings are not enough to capture and understand how the fintech industry is imbricated in the formation of the urban state in the age of startup urbanism, and how cycles of experimentation and consolidation are couched in the urban specificities of an African city such as Cape Town. Our de-scriptive approach shows that the city is not simply a soft-landing pad for today's financial flavour of startup urbanism. In fact, while the urban state has been using the city's fintech ecosystem, and more broadly its homegrown tech sector, to give effect to its own vision for local economic development, different actors at different scales use their agency to reach the rest of the continent, particularly through experimentations and innovations which aim to address financial issues of various sorts. These worlding practices provide a counterpoint to an all-too easy 'frontierist' critique of financialization, if anything in the fact that they enrol a range of diverse urban agendas, rationalities, and geographies.

Obviously, this is just one of the possible cultural economies of fintech in Africa. Our focus on the urban state and on the worlding experiments that have shaped Cape Town's role as a fintech capital provides a reading of startup urbanism, and its fintech inflection in urban Africa, shoring up the diverse scripts undergirding the 'innovation complex' in a city that falls outside the usual list of global financial capitals, New York, London and the likes. However, important questions of 'economic lives' remain in the background (Zelizer 2010). Just as much as the production of fintech needs to be read against the grain of its multiple scripts, the lived experiences of financial access through new technological platforms must also be discerned and interrogated on their own terms – something that we could not do in this article but that deserves attention, nonetheless. Financial technologies are already transforming the fabric of African cities. For a future research agenda, therefore, recognizing that fintech development is also an intervention – either of the urban state or of other urban actors, either contingent or by design – is a necessary step to envision how these fast-paced technological transformations could be more just, equitable, or simply otherwise.

Notes

1. Financial inclusion, which is the specific name given to the expansion of financial services to the unbanked, is even part of the United Nations' Sustainable Development Goals (Target 8.3 and 8.10 of Goal 8). In fact, and aside from venture capital, African national and local governments, multilateral banks, NGOs, and other bottom-up initiatives have also been supporting and nurturing the creation of financial inclusion startups.

2. While these contributions are too many to be acknowledged here, see Mawdsley's (2018) and Lai and Samers' (2020) overarching reviews, and the diverse contributions in Maurer et al. (2018), addressing both cultural and infrastructural facets of fintech expansion in the Global South.

3. Note here that other cities in Africa have claimed the title of 'fintech capital', including Nairobi (Kenya) and Cairo (Egypt).

4. We use the word 'worlding' drawing on the work of anthropologists and urban scholars who have sought to show how also cities in the Global South, although often absent from the canon of social theory, participate in the articulation of global flows of value and knowledge. McCann et al. (2013, p. 584) write: the worlding of the South is a complex and dynamic story of flows of capital, labour, ideas, and visions. To pay attention to such ambitious experiments – inherently unstable, always contested, always incomplete – is to move beyond the handful of stereotypes through which cities of the global 'South are mapped.'

5. These tools have evolved over time, including - but not limited to - the mass-scale roll out of subsidized 'RDP'

housing with provincial governments, the provision of Free Basic Services (FBS) using funding in part from national governments, and the importance of Black Economic Empowerment (BEE) features in urban development projects (Parnell and Pieterse 2002, Van Donk and Swilling 2008). Arguably, the amalgamation of Cape Town into a single metropolitan city in 2000, allowing for high revenue producing areas to be merged with struggling councils, also formed part of the developmental effort to cross subsidize and share resources at the city-scale (Cirolia and Robbins 2021).

6. <u>https://techcentral.co.za/chris-pinkham-veteran-of-the-virtual/25403</u>.

7. https://www.biznews.com/global-citizen/2017/07/10/silicon-valley-chris-pinkham-amazon-twitter-exec.

8. https://www.reuters.com/article/urnidgns852573c4006938800025774300563013-idUS37364255320100615.

9. https://www.investcapetown.com/opportunities/business-process-outsourcing/.

10. Even the arrival of 5G in South Africa has generated conversations, both technical and political, about what percentage of the band should be 'developmental.' The issue was for example debated by policymakers at 2019's Africacom, in a session attended by one of the authors.

11. More recently, it was also announced that Amazon would be the anchor tenant – with a new Amazon Campus – of a brownfield development on a site fraught with complex and controversial visions. This shows how platform companies have become catalytic actors in urban real estate speculation.

12. https://www.biznews.com/global-citizen/2017/07/10/silicon-valley-chris-pinkham-amazon-twitter-exec.

13. name anonymised upon request of the interviewee.

14. https://ventureburn.com/2017/04/world-bank-launches-xl-africa/.

References

Akrich, M., 1992. The description of technical objects. In: W.E. Bijker and J. Law, eds. Shaping technology/building society (pp. 205–224). Cambridge: MIT Press.

Amin, A. and Cirolia, L.R., 2018. Politics/matter: governing Cape Town's informal settlements. Urban Studies, 55 (2), 274–295.

Aurigi, A. and Odendaal, N., 2021. From "smart in the box" to "smart in the city": rethinking the socially sustainable smart city in context. Journal of Urban Technology, 28 (1-2), 55–70.

Bernards, N., 2019. Tracing mutations of neoliberal development governance: 'Fintech', failure and the politics of marketization. Environment and Planning A: Economy and Space, 51 (7), 1442–1459.

Bernards, N., 2022. Colonial financial infrastructures and Kenya's uneven Fintech boom. Antipode. doi:10.1111/anti.12810.

Bernards, N. and Campbell-Verduyn, M., 2019. Understanding technological change in global finance through infrastructures. Review of International Political Economy, 26 (5), 773–789.

Black, B., n.d. EC2 Origins. Blog post archived in Benjamin Black causes trouble here. Available at http://blog.b3k.us/2009/01/25/ec2-origins.html (accessed 15.02.2021).

Breckenridge, K., 2014. The biometric state. Cambridge: Cambridge University Press. Burrell, J., 2012. Invisible users: Youth in the Internet cafés of urban Ghana. MIT Press.

CENFRI. 2018. Exploring Barriers to Remittances in Sub-Saharan African Series. Volume 1: Where Are the Flows? Available from: https://cenfri.org/publications/where-are-the-flows/ (April, 20, 2021).

Cirolia, L.R., and Harber, J., 2021. Urban Statecraft: The Governance of Transport Infrastructures in African Cities. Urban Studies. <u>https://doi.org/10.1177/00420980211028106</u>

Cirolia, L.R. and Robbins, G., 2021. Transfers, taxes and tariffs: fiscal instruments and urban statecraft in Cape Town, South Africa. Area Development and Policy, 6 (4), 398–423.

Cirolia, L.R., 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.

Croese, S., 2018. Global urban policymaking in Africa: a view from Angola through the redevelopment of the Bay of Luanda. International Journal of Urban and Regional Research, 42 (2), 198–209.

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.

Doherty, J., 2019. Maintenance space: the political authority of garbage in Kampala, Uganda. Current Anthropology, 60 (1), 24–46.

Finmark Trust. 2017. Research Report on Mobile Money in South Africa. Available from: <u>http://www.finmark.org.za/wp-content/uploads/2017/12/Final-Report-on-Mobile-Money-in-South-Africa-v11.1_clean_digital_CB.pdf</u> (March, 20, 2021)

Florida, R. and Mellander, C., 2016. Rise of the startup city: the changing geography of the venture capital financed innovation. California Management Review, 59 (1), 14–38.

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.

Gabor, D., 2021. The wall street consensus. Development and Change, 52 (3), 429–459.

Geiger, S., 2020. Silicon Valley, disruption, and the end of uncertainty. Journal of Cultural Economy, 13 (2), 169–184.

Gill, R. and Larson, G.S., 2014. Making the ideal (local) entrepreneur: place and the regional development of hightech entrepreneurial identity. Human Relations, 67 (5), 519–542.

Gomber, P., Kauffman, R.J., Parker, C., and Weber, B.W. 2018. On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services. Journal of Management Information Systems, 35, 220–265. <u>https://doi.org/10.1080/07421222.2018.14407</u>

Guma, P.K. and Monstadt, J., 2021. Smart city making? The spread of ICT-driven plans and infrastructures in Nairobi. Urban Geography, 42 (3), 360–381.

Hecht, G., 2014. Being nuclear: Africans and the global uranium trade. Cambridge: MIT press.

Hu, T.H., 2015. A prehistory of the cloud. Cambridge: MIT press.

James, D., 2014. Money from nothing. Stanford: Stanford University Press.

Lai, K.P. and Samers, M., 2020. Towards an economic geography of FinTech. Progress in Human Geography. doi:10.1177/0309132520938461.

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. doi:10.1080/17530350.2022.2028652.

Larkin, B., 2013. The Politics and Poetics of Infrastructure. Annual Review of Anthropology, 42, 327–343.

Levenda, A. M., and Tretter, E., 2020. The Environmentalization of Urban Entrepreneurialism: From Technopolis to Start-up City. Environment and Planning A: Economy and Space, 52 (3), 490–509.

Mader, P., 2018. Contesting financial inclusion. Development and Change, 49 (2), 461–483.

Marrengane, N., 2021. Local governance and traditional authority in the kingdom of Eswatini: the evolving Tinkhundla Regime. African Studies, 80 (2), 249–272.

Maurer, B., 2012. Mobile money: Communication, Consumption and change in the Payments Space. Journal of Development Studies, 48 (5), 589–604.

Maurer, B., Musaraj, S., and Small, I.V., 2018. Money at the margins: global perspectives on technology, financial inclusion, and design. New York: Berghahn Books.

Mavhunga, C.C., 2017. Introduction. In: C.C Mavhunga, ed. What do science, technology, and innovation mean from Africa? (pp. 1–27). Cambridge: MIT Press.

Mawdsley, E., 2018. Development geography II: financialization. Progress in Human Geography, 42 (2), 264–274.

McCann, E., Roy, A., and Ward, K., 2013. Assembling/worlding cities. Urban Geography, 34 (5), 581–589.

McDonald, D.A., 2012. World city syndrome: neoliberalism and inequality in Cape Town. London: Routledge.

McFarlane, C., Silver, J., and Truelove, Y., 2017. Cities within cities: intra-urban comparison of infrastructure in Mumbai, Delhi and Cape Town. Urban Geography, 38 (9), 1393–1417.

McNeill, D., 2017. Start-ups and the entrepreneurial city. City, 21 (2), 232–239. Mills, L., 2006. 2006 Cape Town BPO review. Available at: https://www.contactcenterworld. com/view/contact-center-article/2006-capetown-bpo-review.aspx (accessed 16.02.2021).

Mothobi, O. and Grzybowski, L., 2017. Infrastructure deficiencies and adoption of mobile money in sub-Saharan Africa. Information Economics and Policy, 40, 71–79.

Mouton, M. and Burns, R., 2021. (Digital) neo-colonialism in the smart city. Regional Studies, 55 (12), 1890–1901.

Mudungwe, P. 2017. Leveraging the African diaspora for development. Available from: https://www.diaspora-centre.org/wpcontent/uploads/2017/10/Leveraging Diasporas for Development.doc.pdf (Dec. 3, 2020)

Nathan, M., Vandore, E., and Voss, G., 2019. Spatial imaginaries and tech cities: place-branding East London's digital economy. Journal of Economic Geography, 19 (2), 409–432.

O'Dwyer, R., 2019. Cache society: transactional records, electronic money, and cultural resistance. Journal of Cultural Economy, 12 (2), 133–153.

Palmer, I., Moodley, N., and Parnell, S., 2017. Building a capable state: service delivery in post-apartheid South Africa. London: Zed Books.

Pan, F., Zhao, S. X., and Wójcik, D., 2016. The Rise of Venture Capital Centres in China: A Spatial and Network Analysis. Geoforum, 75, 148-158.

Parnell, S. and Pieterse, E., 2002. Developmental local government. Democratising Local Government: The South African Experiment, 79.

Parnell, S. and Pieterse, E., 2010. The 'right to the city': institutional imperatives of a developmental state. International Journal of Urban and Regional Research, 34 (1), 146–162.

Parnell, S. and Robinson, J., 2012. (Re)theorizing cities from the global south: looking beyond neoliberalism. Urban Geography, 33 (4), 593–617.

Partech Partners, 2020. 2019 Africa tech venture capital report. Paris: Partech Partners.

Partech Partners, 2021. 2020 Africa tech venture capital report. Paris: Partech Partners.

Pieterse, E., 2019. Urban governance and spatial transformation ambitions in Johannesburg. Journal of Urban Affairs, 41 (1), 20–38.

Pike, A., et al., 2019. Financialising city statecraft and infrastructure. Cheltenham and Northampton: Edward Elgar Publishing.

Pollio, A., 2020a. Making the silicon cape of Africa: tales, theories and the narration of startup urbanism. Urban Studies, 57 (13), 2715–2732.

Pollio, A., 2020b. Incubators at the Frontiers of Capital: An Ethnographic Encounter with Startup Weekend in Khayelitsha, Cape Town. Annals of the American Association of Geographers, 110 (4), 1244–1259. Pollio, A. 2022. Acceleration, Development and Technocapitalism at the Silicon Cape of Africa. Economy and Society, 51 (1), 46-70.

Resnick, D., 2021. The politics of urban governance in sub-Saharan Africa. Regional & Federal Studies, 31 (1), 139–161.

Rossi, U. and Di Bella, A., 2017. Start-up urbanism: New York, Rio de Janeiro and the global urbanization of technology-based economies. Environment and Planning A: Economy and Space, 49 (5), 999–1018.

Rossi, U. and Wang, J., 2020. Urban entrepreneurialism 2.0 or the becoming south of the urban world. Environment and Planning A: Economy and Space, 52 (3), 483–489.

Saxenian, A., 2007. The new argonauts: regional advantage in a global economy. Cambridge: Harvard University Press.

Smit, W. and Pieterse, E., 2014. Decentralisation and institutional reconfiguration in urban Africa. Africa's Urban Revolution, 5, 148–166.

SRG, 2021, February 2. Cloud market ends 2020 on a high while Microsoft continues to gain ground on Amazon. Reno: Synergy Research Group. Available at https://www.srgresearch.com/articles/cloud-market-ends-2020-high-whilemicrosoft-continues-gain-ground-amazon (accessed 15.02.2021).

Startup Genome. 2017. Global Startup Ecosystem Report 2017. San Francisco and Berlin: Startup Genome.

Terrefe, B., 2020. Urban layers of political rupture: the 'new' politics of Addis Ababa's megaprojects. Journal of Eastern African Studies, 14 (3), 375–395.

Torkelson, E., 2021. Sophia's choice: debt, social welfare, and racial finance capitalism. Environment and Planning D:Society and Space, 39 (1), 67–84.

Vally, N.T., 2016. Insecurity in South African social security: An examination of social grant deductions, cancellations, and waiting. Journal of Southern African Studies, 42 (5), 965–982.

Van Donk, M. and Swilling, M., eds., 2008. Consolidating developmental local government: lessons from the South African experience. Cape Town: Juta and Company.

Von Schnitzler, A., 2016. Democracy's Infrastructure. Princeton University Press.

Zelizer, V.A., 2010. Economic lives. Princeton: Princeton University Press.

Zukin, S., 2020a. Seeing like a city: how tech became urban. Theory and Society, 49 (5), 941–964.

Zukin, S., 2020b. The innovation complex: cities, tech, and the new economy. Oxford and New York: Oxford University Press.

Zukin, S., 2021. Planetary Silicon Valley: deconstructing New York's innovation complex. Urban Studies, 58 (1), 3–35.

CIROLIA, L. R., POLLIO, A., SITAS, R; FORTUIN, A., ODEO, J. & SEBARENZI, A, « Fintech 'frontiers' and the platformed motorcycle: Emergent infrastructures of value creation in African cities », Submitted to Environment and Planning D: Society and Space, 2024

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 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.

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 lastmile 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 coconstitution; 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 rewiring 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 guestion 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 statemonitoring 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/emobility 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 spikes⁷—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 2020⁸ (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 "nonprofessional" (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 supplyside 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 lastmile 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 MrD 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. Shopriteowned Checkers (a brand targeting middle-income customers) launched its own ondemand grocery delivery app in 2019—Checkers Sixty60. This platform is a product of ShopriteX, 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 ShopriteX 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-Roma' n, 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 emobility 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 guite 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 tradeoffs. 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.

Notes

1. <u>https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/chart-of-the-day/fintechs-moment-in-africa</u>. 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-taxiin-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. <u>https://faolex.fao.org/docs/pdf/rwa149721.pdf</u>

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 GrahamM(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 P_erez-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 semicivilized. 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 'gapfilling'. 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. Techn_e: 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: <u>https://documents.worldbank.org/en/publication/documents-</u>

<u>reports/documentdetail/391141468007199012/understanding-the-emerging-role-of-motorcycles-in-african-cities-a-political-economy-perspective</u> (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/featuredinsights/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-Roma'n E (2020) Data capitalism, sociogenic prediction, and recursive indeterminacies. In: M€ortenb€ock P and Mooshammer H (eds) Data Publics. London: Routledge, pp. 48–62.

Partech Partners (2022) 2022 Africa Tech Venture Capital Report. Available at: <u>https://partechpartners.com/2022-africa-tech-venture-capital-report/#section1</u> (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 Mediab 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. <u>https://doi.org/10.1177/13678779231223544</u>

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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<u>CIROLIA, L. R. & POLLIO, A, « The back and front stage of digital/urban</u> <u>statecraft: From choreographed performances to bureaucratic software</u> <u>systems in Cape Town », In *Digitalising State* Ed. Ayona Data, 2024.</u>

1. Introduction

indeed constructing- state power (Pike et al., 2019). The inextricable connections between questions of territory, bordering, (im)mobility, standardisation, and regulation give substance to state formation and legitimacy, shaping how the state both sees itself and is seen by its constituents and global audiences alike (Easterling, 2014; Cirolia & Harber, 2022). Even in the absence of networked systems, the promises and the failures of infrastructure become terrains of politics and state formation. Writing about the postcolonial world, for example, Partha Chatterjee (2004) explained that fractured or absent basic service provision shifts otherwise apolitical administrative processes into political negotiations which enable both claims to citizenship and the formation of bureaucratic power. Similarly, in his landmark study of infrastructure-led development in Lesotho, James Ferguson (1994) observed how the construction of infrastructure at once depoliticised and created the condition for state bureaucracies to emerge in the post-colony. Of course, the role of infrastructure in crafting state authority, classifying citizens (and all manner of identities and bodies), structuring space and place, and projecting political power, is hardly unique to the post-colonial context (Latour, 1988). Yet distinctive guestions about developmental statecraft and infrastructure delivery emerge from the specific geographies of urban Africa, and from Cape Town (South Africa) in particular, where we situate this piece.

More specifically, it is the relationship between digital infrastructure and urban statecraft that we are interested in exploring in this chapter —an often-overlooked arena of state making that showcases the complex techno-politics of ICT networks and systems (Datta, 2023). As scholars have pointed out in recent pieces (see Pollio & Cirolia, 2022; Cirolia et al., 2023; Iazzolino & Stremlau, 2023), African governments are hardly the passive recipients of the contemporary and rapid process of digital transformation evident globally. Most African states, for example, are involved directly, or through state-owned companies or agencies, in the development of the ICT backbone of their countries, from connecting to the global Internet through sea and terrestrial cables to the development of domestic data ecosystems. Even in countries with extremely challenging governance contexts, such as that of Somalia, scholars such as lazzolino & Stremlau (2023) remind us of the inextricable co-development of subnational state-making, telecommunications sectors, and the digitisation of urban economies. Governments are equally active in the creation of national digital identification systems (Breckenridge, 2014), used for all manner of bureaucratic classifications, monitoring, taxation and welfare disbursement, and even in the deployment of state-sanctioned digital moneys that would work as alternatives to riskier and less-regulated cryptocurrencies.

At the same time, urban local authorities — including Cape Town— are also directly engaging with digital transformations, reformatting themselves both internally and outwardly (Boyle et al., 2023). Thinking with the ways in which states around the work are digitizing in diverse ways, we dive into the Cape Town case. Advancing the themes of this section of the book, we place current digitalization processes in the South African city into longer genealogies of state transformation and metropolitan formation processes. Specifically, as we show in this chapter, some of these efforts are 'grand' in the sense that they are ostensibly "extrospective" (McCann, 2013; McGuirk et al, 2021). Their goal is to shape public opinion, attract people and boost investments. Others, in contrast, are quiet and internalised, aimed at streamlining relatively banal processes, for example through digitising records. These latter efforts

remake the city from within, shifting internal relationships and reformatting the everyday operations of the urban governing machine. Borrowing Goffman's famous theatrical metaphors of "front stage" and "back stage" (1959), we unpack two very different instances of digital urban statecraft in Cape Town.

In the first instance, we explore the outward-facing digital policy projects related to elite circulations, tech mobilities and the performance of Silicon Valley's playbooks beyond California - what might be called 'front stage'. As we show, the city and province, over time and through various bodies and initiatives, have endeavoured to attract digital nomads and venture capital investors to the city. This, we argue, represents a concerted project which links together the digital investments made in large technical systems (cables, cloud computing etc), efforts to position the city as the start-up capital for and in Africa, and Cape Town's perceived cosmopolitanism and quality of life for tech-savvy expatriates. Ultimately, these efforts coalesced in the depiction of Cape Town as the 'Silicon Cape' of the African continent, through a number of front-stage performances that included the simultaneous production of narratives and policies (Pollio, 2020).

In the second instance, we focus on digital platforms of integrated urban management —the back stage of local digitisation; more specifically, we turn our attention to the city's purchasing and subsequent reliance on the 'Enterprise Resource Planning' (ERP) software, provided by the company SAP, brought in during the consolidation of the metropolitan region in 2001 (Cirolia & Robbins, 2021). Prior to the development of an integrated system, colloquially called 'the SAP system', the six local authorities (and one Metropolitan Council) that made up what is today the Cape Town Metropolitan Municipality had separate —and entirely unique— processes for urban management. The creation of a single system that could standardise operations between the now-defunct local authorities was an imperative of transformation. At the same time, the opportunity was seized to digitally integrate not only the previously autonomous municipalities but also a range of key processes, for example related to municipal billing, land administration, and procurement. These (very costly, yet sustained efforts) represent the quiet, but indeed very large-scale, digital transformations that have taken place in the city over the past 25 years. It is the invisible digital scaffold of metropolitan governance, enabling all kinds of claims around good administration, transparency, and integration (Antenucci & Tomasello, 2023)—some significantly more evident than others.

We place these simultaneous projects against the history of metropolitan formation in the postapartheid period showing how digital urban statecraft develops alongside historical ruptures (in the dismantling of apartheid in South African urban areas) and developmental reconfigurations (in particular in terms of metropolitan scale governance). We argue that such a view circumvents unhelpful binaries within the smart city debates (for example, between good/bad tech, public/private), focussing instead on how concurrent and deeply ambivalent policy projects of digitalisation cohere and conflict in their ambitions and effects. In doing so, our chapter uses two modes of existence of the digitalizing urban state (Datta, 2023), front stage and back stage, to challenge mainstream views of African states, and African local bureaucracies writ large, as inhumane, corrupt, compliance-obsessed, if not failed and ineffective. Such a perspective not only nuances scholarly understandings of African states and the systems, processes, practices and indeed people, who animate them, it also allows us to move past a developmental orientation, to see how states have in fact been effective and consider "propositions" (Baptista & Cirolia, 2021) for more just futures. In closing, we deploy the concept of propositionality not as a euphemism for pragmatism; rather, with attention to the urgency, particularly in the context of rapid digital transformation and deeply uncertain technological futures (Sjol, 2021).

2. Digital statecraft at the urban scale

2.1 Infrastructure and/as state power

Statecraft —the construction, deconstruction and reconstruction of the state structures, authority, and power— reflects overlapping, on-going, contested, and multi-scalar processes (Pike et al., 2019). The state, as we understand it, does not map onto a stable institutional body, with a fixed relationship over a specific territory and people. Instead, we engage with the idea of the state, and by extension, its crafting, as a set of relationships (Cirolia, 2020a) that are 'in the making', often enacted through diverse rituals and calculative practices (Posel, 2017). This perspective owes as much to Foucauldian understandings of the state (not a stable entity but a set of shifting techniques for government) (Lemke, 2009), as to STS-inspired analyses of how technical issues become matters of politics and, in turn, shape how the state comes to govern its peoples and territories (Mitchell, 2002). It is through these technopolitical lenses that we see pathways for expanding how we utilise concepts of statecraft in thinking with the digital and the urban in Africa.

Specifically, our chapter follows in the footsteps of two lines of scholarly work that have charted the making of African states in the post-colonial (and, in South Africa, also the post-apartheid) period. On the one hand, scholars have scrutinised the critical role of infrastructure in questions of statecraft (Goodfellow and Huang, 2020; Rode et al., 2020). While mega-projects easily present themselves as sites of state power (see, for example Croese, 2018; Havey & Knox, 2016, Terrefe, 2022), in the South African context there is also a rich tradition of scholarly work about how the apartheid and the post-apartheid nation-building projects were enacted through diverse material processes, such as national identification (ID) systems and prepaid technologies for service like water and electricity (Breckenridge, 2014; Edwards & Hecht, 2010; Posel, 2017; Von Schnitzler, 2017).

On the other hand, scholars have also addressed the development of sub-national and multi-level governance as instrumental in processes of state formation in Africa, with successive rounds of institutional interventions producing near histories of formation and reformation (Brosio, 2002; Cirolia, 2020b). Against the backdrop of informality, traditional and hybrid governance, and lived experiences of state reform, the plurality and internal contradictions of the state and accompanying contestation are a central feature of statecraft's lived experience, as politicians, technocrats, private sector, and citizens alike are faced with successive and ongoing experimentations with governance. While decentralisation processes in Africa are often contested and rarely realised according to their initial ambitions, the notion of "urban statecraft" usefully captures the multiple ways in which the state is rescaled at the municipal level (Cirolia & Harber, 2021; Cirolia & Robbins, 2021) —whether through fiscal practices of revenue collection or through the localised management of services that would otherwise fall within the remit of national authorities. In fact, the making of the urban state is also embedded in what are often opaque and everyday processes of infrastructure and service delivery governance —processes that are distinct but inseparable from infrastructure itself (Cirolia & Harber, 2021).

2.2 Digital/urban statecraft in the global south

Among the many infrastructure systems that have been interrogated in connection to state formation, also digital networks have been recognised as important sites of statecraft (Sassen, 2000; Braman, 2009) However, digital infrastructures, encompassing both material systems (hardwired broadband, mobile networks, data centres, et cetera) and the innovation ecosystems built upon them, present an interesting paradox when it comes to their relationship with the state. While it is true that information technologies are increasingly corporatised, and therefore academic critique has focused on new forms of private rentierism that are beholden to digital capital (Sadowski, 2020; Birch and Cochrane, 2022), states across

the world remain important actors in the development and in the making of digitisation. This is both a historical fact and an ongoing reality. Governments of all colours and political inclinations regulate, standardise, invest, and shape digital infrastructure. In turn, as Marion Fourcade and Jeffrey Gordon explain (2020), through the same processes of digitization happening in the private sector, the state itself is transformed and readapts itself to become not just an observer but a digital player. "Public and private commingle at the frontier of technological change", they write (p. 79), challenging the widespread notion that the most advanced forms of techno-capitalism are solely driven by big tech companies like Amazon, Google and Meta.

This is particularly pronounced in the global south, where several national governments embraced various ICT4D (ICT for development) agendas hoping to transform struggling national economies into booming markets for value-added services (see Heeks, 2017; Mann & lazzolino, 2021). These agendas had multiple foci, from the delivery of broadband infrastructure and the digitisation of bureaucratic systems, to addressing digital literacy and other access divides. Under the rubric of 'leapfrogging', the key rationale for these programmes was that global south nations needed to invest in digital connectivity to release the dormant entrepreneurial potential which, accordingly, lay within them. In this sense, China is often described as a paradigmatic case of digital statecraft. In the late 2000s, for example, the state gave effect to its project of import substitution precisely through the development of an unparalleled 3G network that, at once, connected millions of people and reduced the country's reliance on foreign equipment and manufacturers (Hong, 2017). Once this infrastructure was in place, Beijing's policies shifted to a massive programme of state-led entrepreneurialisation that sought to foster the boom of digital markets, from e-commerce to fintech (Zhang, 2023). While China is often, and problematically, portrayed as an outlier, in fact many other nations have drawn their own path to ICT-led developmental statecraft (Bunnell, 2004; Chan, 2014; Irani, 2019).

Turning to the African context, we see similar dynamics at play, with states and their authorities enacting, and not just observing or regulating projects of digital transformations. This is not, as one may think, only happening in places that have highly centralised governments, such as Rwanda, Uganda or Ethiopia, all of which have had a heavy controlling hand in the development of their digital networks and markets. Equally, in states that have a multi-stakeholder approach to digital governance, ICTs are the terrain of state interventions, political negotiations, and geopolitical alignments. A good example of this is Kenya's current developmental programme —*Vision 2030*— which explicitly prioritised the goal of replacing agriculture with ICT as the main source of its gross domestic product (GoK, 2007). To do so, the state invested considerable effort in developing national fibre-optic infrastructure and far-reaching digitisation projects, while seeking to attract foreign loans and investments to give effect to this project. As Laura Mann and Gialuca Iazzolino (2021) observe, the Kenyan state ultimately gave effect to shifting developmental visions (and theories of economic development, most recently behavioural approaches) precisely through the "curation" of digital infrastructure, albeit in the context of ostensibly neoliberal governance.

Kenya is also a good example of the urban rescaling of digital statecraft. *Vision 2030*, for example, hatched a set of specific flagship urban ICT projects, from Nairobi's smart city plan (see Guma & Monstadt, 2021) to Konza Technopolis —a greenfield satellite city dedicated to the development of Kenya's digital economy. Overall, the urbanisation of digital statecraft dovetails with trends that have been observed globally: cities across the world pursue the Silicon Valley playbook as a "mobile urban strategy" in order to become hubs of tech innovation (Pollio & Rossi, forthcoming). In fact, innovation clusters have become objects of urban policy, consultancy, and experimentation, as well as one of the sectors where economic growth and competition turn into matters of municipal statecraft (Lauermann, 2018). At the same time, the 'smart city' discourses and practices have in the last 15 years pushed city

governments to internally adopt data-driven and digitally enabled platforms for service delivery and monitoring (Barns, 2019; Kitchin, 2023).

The case of Cape Town is, in this sense, especially interesting because, as we will see in what follows, the urban state (mostly through the city and the province) has had a considerable role in shaping technology economies, while at the same time reformatting itself for the digital age. Given the vast gamut of policies and initiatives geared towards ICTs in the city (see Cinnamon, 2020; Söderström, 2021; Boyle et al. 2023), this chapter focuses on the two extreme ends of these diverse forms of digital statecraft: what we call, drawing on Erwig Goffman's dramaturgical analyses of social practices, the "front" and "back stage". With the former, we refer to the making of an extrospective kind of statecraft, designed to promote the city on the global arena. With the latter, we describe instead the introspective processes of digitisation that shape the city's own bureaucratic processes. Because of their theatrical nature, Goffman's stage metaphors easily lend themselves to describe the simultaneously visible and invisible mechanisms of digital technologies (Pinch, 2010), much beyond the context which they originally described (the dining table). Obviously, the idea of a stage also speaks to a broader interest in the performativity of theories and policies that pragmatist sociologists and economic historians have explored at length (MacKenzie et al, 2007). Without the space to delve into these debates, we found these metaphors of performance useful, here, not just as descriptive categories, but also because they offer us a methodological orientation for parsing, among many leads, concurrent modes of existence of digital statecraft in Cape Town.

3. Decentralisation and digital infrastructure in Cape Town

3.1 A brief history of decentralisation in Cape Town

Cape Town's history of sub-national state structuring forms part of the recent history of South Africa, hardly a distant memory for many in the city. In the late 1980s, the greater Cape Town region had 69 local authorities (Turok, 2001). These were founded on existing racially segregated spatial patterns, with different capabilities given to the different authorities (Bell et al., 1993; Cameron, 1999). Many of the local authorities governing areas classified as 'Black African' and 'Coloured'1, had almost no revenue base and significant service delivery backlogs. With mounting pressure to deconstruct the apartheid structures of the country, attending to this spatial and racial disparity was one of many necessary reforms. In constituting new structures in 1997, efforts were made to combine historically disadvantaged areas of the city which had weak revenue-raising capacity with larger, formerly 'White', municipalities with greater administrative and fiscal capacity (Van Donk & Swilling, 2008). The outcome was the formation of six local authorities: Cape Town Central, South Peninsula, Blaauwberg, Tygerberg, Oostenberg, and Helderberg. This required not only the drawing of new boundaries, but also the address of staff, assets and liabilities, rights, obligations and duties which needed to be transferred and relocated to the new administrations and their respective leadership bodies.

In 2000, as part of an ongoing national reform of the local government system, a so-called 'Unicity' was formed, combining Cape Town's autonomous authorities into a single metropolitan municipality. This Unicity excluded the wealthy and wine producing region of Stellenbosch but did include similarly distant areas such as the industrial Atlantis and the suburban Somerset West. The processes of unification not only required the harmonisation of a wide range of technical processes, but it also required attending to cultural contests – from what language should be spoken in meetings (English or Afrikkans) and whether maintenance staff accustomed to working in white areas should be forced to work in townships.

¹ We have included quotations as we are referring to the official categories constructed and inscribed into law by the Apartheid government. The quotations do not intend to dictate or diminish how people and communities identify themselves socially, culturally or politically.

Notwithstanding considerable techno-political strife in the transition process, the City of Cape Town is now South Africa's second-largest city in population terms, and has the second-largest municipal budget of the country's eight metropolitan cities. The Unicities created across the country produced the governance foundations for extending comprehensive, metropolitan-wide service arrangements, and their related administrative and fiscal systems. For Cape Town, this included creating a unitary City Council at the metropolitan scale and retaining the bulk of utility provision functions within the newly formed city government.

3.2 Cape Town's digital infrastructure

The early days of the Internet in South Africa coincided with the replacement of the apartheid regime with the first fledgling steps of the new democratic nation. Faced with skyrocketing unemployment, years of international isolation, and a racially divided national economy, the first post-apartheid governments launched two important macroeconomic programmes, the RDP in 1994 and GEAR in 1997/1998, with the triple aims of spurring economic growth, addressing the massive infrastructure shortfalls of segregated national planning (in housing, access to electricity and water, etc), and creating jobs. It is in this context that, borrowing the language and the model offered by developmental programmes that had generated growth in other parts of the world, technology and innovation-driven economies started to appear in policy-speak and reports, for example in the 1995 Department of Trade and Industry's *National Strategy for the Development and Promotion of Small Business in South Africa* or in 1996 *White Paper on Science and Technology*. These policies explicitly foregrounded a link between digital innovation and the redistribution of economic resources, ultimately pledging the importance of telecommunication infrastructure to realise these macroeconomic goals. In time, local governments embraced this approach too and produced their own strategies for innovation-driven economic growth.

More than any other, it was the Western Cape province that stood at the forefront of this area of policymaking, with a *White Paper on Preparing the Western Cape for the Knowledge Economy of the 21st Century*, and the municipal government following suit with a number of initiatives (Pollio, 2020). And even though other municipalities were also committed to ambitious digital agendas (Odendaal, 2011), Cape Town eventually took the lead as the city hosting the majority of businesses and startups working in the new economies enabled by digital connectivity. If in the late 1990s Johannesburg had hosted the lion's share of innovative businesses in South Africa, only a couple of years later it was Cape Town that had the largest cluster of tech startups in the whole african continent (Pollio, 2020).

There were many reasons for this sudden primacy in Africa's tech economy, but most importantly it was a good digital infrastructure that made Cape Town a gateway to the rest of the world. As explained elsewhere, one of the key economic sectors driving investment and support for digital infrastructure has been the business process offshoring sector (BPO), call centres and other more sophisticated outsourced services, including software development (Pollio & Cirolia, 2022). Both the local state and the national state saw many developmental advantages in the BPO industry: job creation for lower skilled workers but also the emergence of an innovation ecosystem that justified supply-side investment in costly infrastructure that would reduce connectivity prices and improve network latency. A supportive regulatory environment, coupled with the increased demand of low-latency connectivity, eventually generated the conditions for a world-class data centre industry, as attested by the fact that Cape Town became the first African node in the global clouds of both Microsoft Azure (in 2019) and Amazon AWS (in 2020).



Figure 1. Maps developed by the author. Raw data sourced from open access: AWS, 2020; Microsoft Azure, 2020.

In the meantime, however, considerable efforts were poured into the extrospective promotion of Cape Town as a cradle of made-in-Africa digital innovation. These were "tales of regional advantage" (Pollio, 2020, p.2720), in the sense that they mobilised both economic theories of innovation clustering and anecdotes about local successful entrepreneurs to perform the city's reputation as Africa's Silicon Valley - its Silicon Cape. These tales contributed, as the theorists of economic performativity suggest (MacKenzie, 2006; Callon, 2007), to the making of the digital economies that they purportedly described and promoted with reports, maps, policy documents, and surveys. To some of these front-stage performances, we turn our attention now, capturing a glimpse of the many ways in which the local state made ICT into a key matter of economic statecraft.

4. The front and backstage of digital statecraft in Cape Town

4.1 Front stage policy project: Cape Town Tech Month

Scavenging through the cascade of documents, reports, and interview transcripts that we collected over the past seven years spent researching the emergence of Cape Town's digital economy ecosystem, one thing becomes clear. At some point in the recent history of the city, different people, with different roles and from different walks of life, were asking the same question. This was in the late 2000s, early 2010s, and the question was: how do we make Cape Town globally known as a city of digital innovation, good infrastructural connectivity, and easy access to tech capital? The people who were pondering this question were South Africans who had returned to Cape Town after a successful career in the Californian tech economy. They were local administrators working for the economic departments of the city and provincial governments, but also for their developmental arms such as WESGRO, a joint agency for investment promotion. They were local entrepreneurs and investors who'd taken a leadership role in some of the lobbying organisations created to support the city's tech ecosystem —especially the Silicon Cape network. They were BPO industry leaders, and their own sector-promoting alliances, for instance CallintheCape. And there were other industrial players, for example data centre companies and ISPs, who knew that the better Cape Town fared in its digital economy, the more their business would thrive.

Hence the answers to the question were not, of course, univocal. We have mentioned in the previous section how many policy efforts eventually filtered down to supporting the BPO industry with a diverse range of interventions, from investment in city-owned fibre-optic infrastructure, to tax incentives and other forms of subsidies. But there are another set of responses that the local state, in close partnership with the private sector, crafted to promote Cape Town as Africa's digital 'capital' on the global stage.

The most vivid example of front-stage promotional activities is perhaps encapsulated by an event that ran for a few years until 2019: Cape Town Tech Month (CTTM). In 2020, it was shelved due to the Covid-19 pandemic, and it was later relaunched and rebranded as Techspo in 2022 (though in smaller fashion than its predecessor). The reason CTTM 2019 is an interesting case of extrospective digital/urban statecraft is that it was, quite literally, a staged choreography of the city as a startup capital, a celebration of its connectivity infrastructure, but also a performance of new policies that intermingled with the marketing of the city on the global scale. In fact, CTTM 2019 set the stage to both present and create the conditions for digital transformation policies that are now ongoing.

CTTM 2019 ran between November and December 2019, a period which usually marks the beginning of Cape Town's seasonal tourism. However, the city was not as crowded with vacationers as it was with businesspeople and policymakers. Business hotels, convention centres and conference facilities had a tight schedule of events. A coalition of actors —the city, the province, WESGRO, Silicon Cape, and other agencies such as Invest in the Cape (now Invest Cape Town)— were behind the branding of November as the city's 'tech month'. Scores of international entrepreneurs, investors, representatives from global corporations and governments flooded the city, which put up its best show. In the wealthy southern suburbs, Jacarandas were in their full blossom. Native blue African lilies were also blooming in the manicured flower beds that ornate Cape Town's business facilities. Spring storms had given way to the Cape's dry, windy days of sun and clear skies.

Beyond the city's natural beauties, Cape Town's convention and conference centres showcased state-of-the-art facilities. Over the previous twenty years, the city government — in partnership with the private sector — had engineered a world-class setting for business tourism. David MacDonald (2012) has suggested that this 'world-city syndrome" has entrenched an exceptional version of neoliberal urbanism. Other urban scholars, however, have argued that the local government has also been at the forefront of a contradictory, developmental, redistributive agenda which, if not successful, has at least attempted at mending some of the spatial and economic sores of apartheid segregation (Parnell & Robinson, 2012).

CTTM 2019 was, in this sense, a celebration of the achievements of developmental projects of digital transformation, but also part of the world-city ambitions to attract foreign investors and elite mobilities of digital entrepreneurs beyond more traditional tourists. It encompassed tech conferences, like Catalyst Africa, and other events, such as Africarena and Startupbootcamp Afritech, which featured the final pitching session of Africa-wide acceleration programs (Pollio, 2022). Technology entrepreneurs from across the continent had been trained in accelerated entrepreneurship schools in Cape Town, and they would finally meet potential investors and venture capitalists in highly choreographed events open to the wider public. At Africacom, the largest, longest-running, technology fair in the continent, telecoms, media and other tech companies gathered in the wide space of Cape Town's international convention centre, where one could see Google's smart, solar-powered Wi-Fi poles ---which were meant be scattered across the city's poorest suburbs- while hundreds of small internet providers, cable laying companies, media operators and other firms introduced themselves to politicians, bureaucrats, foreign investors and entrepreneurs. Economic and ICT ministers from all over Africa could be spotted between the stalls. alongside key investors in the African VC landscape. A week earlier, a dedicated conference for venture capitalists had taken place in the wineries of Stellenbosch, a town on the border of the metropolitan area, inaugurating CTTM 2019.

Dense with these kinds of happenings, CTTM 2019 ended with Cape Town's 'startup week', the flagship initiative of the Silicon Cape ecosystem taking place early in December. With a more local outlook, startup week was an intensive exercise of self-celebration and self-critique. The talks and workshops addressed issues of ecosystem building, gender inequality and racial bias in the local tech scene. They acclaimed local success stories, but also somberly acknowledged the duress of economic apartheid in

the present. As a literal background to tech week, the entire venue had been branded with posters showcasing infographics that quantitatively summarised the tagline "Cape Town, Western Cape - Africa's leading digital hub". These infographics included data about digital infrastructure, extant policies, as well as rankings of how the city fared globally in terms of tech companies and volume of investment. Overall, as Donald McNeill (McNeill, 2017, p.232) has argued, these "startup city" numbers make city competition commensurable while performing the very reality that they are meant to measure.

Significantly, 2019 tech week events were also an occasion for the urban state to rally support behind two important pieces of policy that were on the backburner: a startup visa, and a nation-wide Startup Act that would streamline and ease bureaucratic and fiscal diligence for fledgling tech companies (the startup visa project has now become part of the broader Act proposal). These were initiatives whose reach was national rather than just urban (as this kind of legislation naturally falls within the remit of the national government), but it was in Cape Town that the thrust emerged. During 2019 events attended by both provincial and city elected politicians, we observed how a number of discussions germinated around the need for more permissive policies that would facilitate foreign investments in local tech companies, as well as the need to encourage so-called 'digital nomads' to settle in the city and start their job-creating small enterprises. According to a representative of the Silicon Cape, already in 2015 the lobbying group had expressed the need for such kinds of frameworks. Eventually, these conversations were formalised in 2020, at another Cape Town event that was originally part of Tech Month, with the launch of the Startup Act Movement and of the Startup Act Steering Committee, which features several Cape Town-based agencies, from the Silicon Cape to WESGRO.

There is no room to delve into the ins and outs of the ongoing legislative process and the specific techno-politics of South Africa's potential Startup Act, which mirrors similar pieces of policies adopted by Senegal, Nigeria, and Tunisia in the last few years, while addressing peculiarities of the country's corporate law, such as the broad-based black economic empowerment (B-BBEE) framework. As it is an ongoing process, it is hard to draw conclusions about the specific features of the act, or the problematic of digital 'nomadism' (McElroy, 2020). Yet it is worth noting how, even in the absence of the national framework, the city and the province rode the wave by adopting smaller strategies, for example a partnership with Airbnb to attract remote workers (de Kock, 2023). Ultimately, what's relevant to our discussion of digital/urban statecraft, is that front-stage performances such as CTTM 2019 communicate extrospectively the city's positioning as a digital hub with world-class infrastructure, a destination for investors and digital nomads, while choreographing the internal debates and the policy alliances and negotiations that enact the very essence of this infrastructural drive in the global digital economy. These choreographed performances do attest to the "entrepreneurialism" of Cape Town's digital state (Wu, 2020), but their multiple genealogies also remind us of the different rationalities, including that of economic redress, that coalesce into the promotion of cities as cradles of the digital economy. This developmental thrust becomes even more visible when, as we do now, one turns to a much less visible aspect of digital transformation, one that sits in the background of how the city is administered.

4.2 Back stage municipal management system: Project Ukuntinga

A lesser-known investment of digitalisation in Cape Town has been in the operating systems of the City, systems that have enabled interdepartmental connectivity and alignment, as well as real-time data collection and integration across platforms within the administrative machine. We focus here on the key project which underpinned the transition to 'e-government' in Cape Town (notably, additional processes fall under the banner of 'e-governance'²). As Cinnamon (2022) notes, the "Unicity project presented an

² <u>https://www.slideshare.net/nsooful/enterprise-resource-planning-erp-and-change-in-the-city-of-cape-town</u>

opportunity to develop a foundational digital architecture to automate and streamline internal processes" (p. 853). As such, alongside the consolidation of local government in Cape Town, Project Ukuntinga: SAP/ERP³. SAP is German software company best known for their ERP software. The Project Ukuntinga: SAP/ERP programme in Cape Town provides a unique perspective into urban statecraft, showcasing the internal reconfiguration of state processes and new mediations between urban residents and bureaucratic operations.

The programme started its design phases in 2000 and the SAP/ERP system went live in 2003 (Tudor, 2011), implemented by the services company Accenture and South African company, Cornerstone⁴, and has now been in use for nearly 20 years (Odendaal, 2016). At the time of implementing the ERP system, it cost R300 million (some estimates are much higher), making it the biggest capital investment by the city apart from the R400 million contribution to the Cape Town International Convention Centre (Boyle et al., 2023⁵). As the City Manager at the time noted, this expense was seen to be exorbitant, in part owing to the incredible needs of the deeply disadvantaged areas which come to be under the management of the unified city. However, by 2009, officials interviewed for this project noted that that the programme's revenue optimisations had justified the costs expended in its development and ongoing operations. This development of a single 'municipal account' (in the words of the CFO of the city at the time), for each household played a central role in revenue collection, reducing the bureaucracy experienced by ratepayers who, prior to implementation, received a plethora of paper bills, each with its own laborious payment process. While many services have since been moved to prepaid (effectively reversing the relationship between use and payment), this early integration eased the process of consolidation.

At the time of implementation, it was the world's largest municipal implementation of the SAP. "It was a big thing and we were all very excited and nervous, we knew there were risks but we wanted to get ahead of them" (interview with previous City Manager, 2018, Cape Town). According to Mohlakwana (2021)⁶, in the first years of its implementation, "more than 300 processes were modelled and implemented whilst more than 113 legacy systems and 70 interfaces were replaced". In addition, as officials pointed out, the programme enabled "a transition from the previous disjointed, paper-based system to a comprehensive, more integrated system with enhanced transparency within and between departments". While other metros did, eventually, follow suit implementing smaller scale SAP programmes, Cape Town's early and holistic adoption solidified the 'backstage' work required to operationalise the integration of disparate municipal functions, and indeed municipalities themselves, not only enabling coordination, but constructing the metropolitan authority as a uniformed entity. While the programme built on earlier data =-driven and digital processes (Cinnamon, 2023), it did not simply replace or replicate these more advanced alternatives. According to the City Manager at the time, it created entirely new processes, in part owing to the need to level the playing field across each of the disparate local authorities which agreed to be integrated but refused the privilege of anyone.

³ Ukuntinga means 'to soar' in isiXhosa.. SAP stands for Systems, Applications, and Products in Data Processing

⁴ <u>https://www.itweb.co.za/content/raYAyMoVndk7J38N</u>

⁵ In 2003 the rand to USD rate was 7 rand to 1 USD. Making it around 43 million USD to implement the project. The rate when writing this paper is closer to 20, as such, using the current rate would provide an incomplete picture of the cost.

^{6 &}lt;u>https://scholar.sun.ac.za/server/api/core/bitstreams/d6ac622f-2c2f-4d88-b1c0-35c91f0378c0/content</u> 7 <u>https://www.theigc.org/sites/default/files/2023-</u>

^{01/}Wright%20et%20al%20Case%20Study%20January%202023_0.pdf

The programme initially focussed on innovating internal processes of HR, financial accounting, plant management, and record digitisation. Reflecting this internal focus, much of the documentation on SAP implementation notes the vital relationships that must be forged between senior politicians, senior management teams, and finally the IT leadership. It focuses on how the programme allows for departments to get real time information on infrastructural breakdown, enabling faster response and reducing the responsibility of citizens to report faults. The programme, despite its minimal public praise, has documented various fiscal and operational successes. However, implementation was a challenge. "At times it feels like we want to war with our organization"⁸, it was noted in a 2003 PowerPoint presentation given at a public administration conference by the Chief Information Officer of the city. This quote reminds us of the intense heterogeneity of the local state and the contestation that any sort of 'harmonisation' process brings.

Since its launch, its subsequent phases have expanded scope and scale, with new modules being added incrementally. Today, the system (including the software and related IT capacity provided by city officials and supporting companies), "is responsible for service delivery, human resources, logistics, and finance. The software also creates one single record for each citizen, by running analytics across different data sets" (Antenucci & Tomasello, 2023). The relationship between SAP and citizen data in Cape Town (as also discussed by Cinnamon, 2023), presents new avenues for thinking with statecraft and calculative logics. While the programme is primarily still focussed on the internal processes of the city, these internal processes now extend to the classifications and documentations of urban residents, with little public documentation of how this data is collected, stored or utilised. While the datafication of urban citizens is in no way new in the South African context⁹, the quiet, consistent, and systematised expansion of the platforms of the city to include its interface with urban citizens is both apparent and uncharted.

Building on these systems, we also see incremental attempts for such systems not only to integrate the management of the city through digital overlay, but also to use the intersections between data computing capacity and city responses to create predictive systems. An example, starting in 2017, there was the development of a customised version of an ERP software, SAP - High-performance Analytic Appliance' (HANA). This provided the foundation for the 'Emergency Police Incident Control' (EPIC) platform which aimed to to address security risk, crime, and emergency response – mobilizing emergency response through the use of cameras, GPS tracker, and other sensor technology. As Antenucci (forthcoming) points out :

Not only does EPIC collect and visualise urban data, it also generates decisions and interventions about the city. The platform's analytics are designed to create "predictions' ' about future incidents and crimes, to indicate the appropriate procedure for each event, and to optimize the allocation of resources.

At the time of writing, however, city officials noted that the program could at best decrease response times and coordinate efforts. They could not, however, predict where crime would take place using this data and that policing efforts continue to focus on areas with historically high incident rates. Ultimately, decisions about how and where to intervene are, by nature of being deeply embedded in opaque systems, unable to be held to public scrutiny, not even by the officials who form part of their development and deployment.

There are several insights offered by the SAP implementation. First, we see the ways in which the backstage of city systems presents an important site of digital statecraft. This digital integration offers

^{8 &}lt;u>https://www.slideshare.net/nsooful/enterprise-resource-planning-erp-and-change-in-the-city-of-cape-town</u>

⁹ see Migozzi,2023, where links between apartheid classification and contemporary credit scoring are made.

some opportunities (undeniably useful for Cape Town's revenue generation and ability to launch rapid responses to emergencies). At the same time, such a systematic integration holds within it a wide range of risks. Not only does it increase cities' vulnerability to breaches in data protection, the risks of which even cities in the global north are only now coming to contend with, it also quietly inscribes into algorithmic processes very particular ideas about how the city should work, and for whom. Ultimately, however, the very construction of a metropolitan authority, through processes of digital integration, is not separable from the outward-looking policies, often at the behest of the same authority, that we described in the previous section – a point that we return to in the conclusion of this chapter.

5. Thinking propositionally about the digitalising state

In line with the theme of this collection on the 'digitalising state', we presented two different ways in which digital/urban statecraft manifests in the city of Cape Town. On the one hand, we focused on choreographed performances of digital infrastructure, intended both as material systems and the digital economies built upon it, which showcased how the urban state, through its various arms and legs, participates in the simultaneous production of narratives and policies that inscribe digitalisation as a matter of developmental, economic statecraft for the city. On the other hand, we charted the behind-the-scenes processes of digitisation that accompanied and, arguably, enabled the formation of metropolitan governance and authority. Without the latter it is difficult to imagine the successful, extrospective performances of Cape Town as Africa's leading startup city. Empirically, therefore, it is important to recognise how digital/urban statecraft exists across a variety of registers, some directed to foreign investors and digital nomads, others to national politicians and stakeholders, and others more toward the internal bureaucratic ecosystems that make civic administration possible in the first place. Adopting the descriptive metaphors of "front stage" and "back stage", we captured the two extremes of these processes of digital transformation in Cape Town, cognisant that many more examples exist in the middle and overlap between the extremely visible and the invisible sides of digital policymaking.

In addition to this descriptive effort, the chapter offers a political and conceptual direction to research on statecraft in urban Africa more generally. Without rehearsing this already well documented literature – there is a tendency to portray African states (and particularly urban governments) as failed or developmentally delayed institutions. The focus on the inefficient, compliance driven, corrupt and untimely 'modern' nature of African bureaucratic worlds dominates many critiques. Similarly, there is a tendency to portray the efforts of African states to develop technological industries as a case of (often unsuccessfully) pandering to global capitalism (this is perhaps most apparent in the critique of the smart cities efforts in Africa). Critique is important – and we must remain vigilant to all the ways in which policy projects yield very different results to their stated intentions and states use digitalisation in ways that are regressive and violent. Simultaneously, we must also contend with cases whereby African local governments have embarked on ambitious and ambivalent digital processes.

In doing so, we argue that a look at the digitalisation of the state in Cape Town, South Africa, offers a more propositional move (Baptista & Cirolia, 2022), which both recognises the adeptness of the state (in this case sub-national metropolitan governments), its quite incredible capacity to advance a digital agenda and lead (even globally) in sub-national systems development, while identifying ways in which these systematic processes require constant and careful attention to ensure that they are re-inscribed into more progressive manners at each update. We are therefore able to see both the ways in which the digitalisation of the state is multiple, dynamic, and penetrable. We can, in this sense, both critique the ways in which technologies are deployed and inscribed in bureaucratic processes, while, at the same time, understand the diverse impulses and orientations of the state in regard to practical questions of urban management. By foregrounding both front-stage and back-stage processes, in other words, academic critique can find the conjunctures and the transitional moments when digitalisation becomes

not just a matter of entrepreneurial state policy but a more ambivalent mode of self-construction through the redress of structural inequalities.

6. References

Antenucci. I. (Forthcoming). Speculative Cities: Infrastructures, security, and value in Smart urbanism. Palgrave Macmillan.

Antenucci, I., & Tomasello, F. (2023). Three shades of 'urban-digital citizenship': borders, speculation, and logistics in Cape Town. *Citizenship Studies*, 27(2), 247-270.

AWS (2020). Global Infrastructure Overview. Retrieved from https://aws.amazon.com/about-aws/global-infrastructure/?p=ngi&loc=1 [26/5/2020]

Baptista, I., & Cirolia, L. R. (2022). From problematisation to propositionality: Advancing southern urban infrastructure debates. *Transactions of the Institute of British Geographers*, 47(4), 927-939.

Barns, S. (2019). *Platform urbanism: Negotiating platform ecosystems in connected cities*. Springer Nature.

Boyle, L., Harlow, J., & Keeler, L. W. (2023). (D) evolving smartness: exploring the changing modalities of smart city making in Africa. *Urban Geography*, 1-25.

Braman, S. (2009). Change of state: Information, policy, and power. MIT Press.

Breckenridge, K. (2014). Biometric state. Cambridge University Press.

Brosio, G. (2002). Decentralization in Africa. In Managing fiscal decentralization (pp. 337-365). Routledge.

Bunnell, T. (2004). Malaysia, Modernity and the Multimedia Super Corridor: A Critical Geography of Intelligent Landscapes. London: Routledge.

Birch, K., & Cochrane, D. T. (2022). Big tech: Four emerging forms of digital rentiership. *Science as Culture*, *31*(1), 44-58.

Callon, M. (2007). What does it mean to say that economics is performative?. Do economists make markets? On the performativity of economics, 311-357.Chan, A. S. (2014). Networking peripheries: Technological futures and the myth of digital universalism. MIT Press.

Chatterjee, P. (2004). The politics of the governed: Reflections on popular politics in most of the world. Columbia University Press.

Cirolia, L. R. (2020a). Contested fiscal geographies: Urban authority, everyday practice, and emerging state-finance relations. *Geoforum*, *117*, 33-41.

Cirolia, L. R. (2020b). Fractured fiscal authority and fragmented infrastructures: Financing sustainable urban development in Sub-Saharan Africa. *Habitat International, 104*, 102233.

Cirolia, L. R., & Harber, J. (2022). Urban statecraft: The governance of transport infrastructures in African cities. *Urban Studies*, *59*(12), 2431-2450.

Cirolia, L. R., & Robbins, G. (2021). Transfers, taxes and tariffs: fiscal instruments and urban statecraft in Cape Town, South Africa. *Area Development and Policy*, 6(4), 398-423.

Cirolia, L. R., Sitas, R., Pollio, A., Sebarenzi, A. G., & Guma, P. K. (2023). Silicon Savannahs and motorcycle taxis: A Southern perspective on the frontiers of platform urbanism. *Environment and Planning A: Economy and Space*, 0308518X231170193.

Croese, S. (2018). Global urban policymaking in Africa: A view from Angola through the redevelopment of the Bay of Luanda. *International Journal of Urban and Regional Research*, 42(2), 198-209.

Datta, A. (2023). The digitalising state: Governing digitalisation-as-urbanisation in the global south. *Progress in Human Geography, 47*(1), 141-159.

De Kock, C. (2023, October 25). Cape Town's Game-Changing Strategy: Could a Remote Work Visa and Airbnb Partnership Make it the Ultimate Year-Round Digital Nomad Haven?. *Cape Town Today.*

Easterling, K. (2014). Extrastatecraft: The power of infrastructure space. London: Verso Books.

Edwards, P. N., & Hecht, G. (2010). History and the technopolitics of identity: The case of apartheid South Africa. *Journal of Southern African Studies*, *36*(3), 619-639.

Ferguson, J. (1994). The anti-politics machine:" development," depoliticization, and bureaucratic power in Lesotho. University of Minnesota Press.

Fourcade, M., & Gordon, J. (2020). Learning like a state: Statecraft in the digital age. *Journal of Law and Political Economy*, 1(1).

Government of Kenya (GoK) (2007) *Kenya Vision 2030: A Globally Competitive and Prosperous Kenya*. Ministry of Planning & National Development and Vision 2030. Government Printer, Nairobi.

Goffman, E. (1959). The presentation of self in everyday life. New York: Doubleday.

Guma, P. K., & Monstadt, J. (2021). Smart city making? The spread of ICT-driven plans and infrastructures in Nairobi. *Urban Geography*, *42*(3), 360-381.

Harvey, P., & Knox, H. (2016). The enchantments of infrastructure. In *Roads and Anthropology* (pp. 63-78). Routledge.

Heeks, R. (2017). Information and communication technology for development (ICT4D). London: Routledge.

Hong, Y. (2017). *Networking China: The Digital Transformation of the Chinese Economy.* Urbana, Chicago and Springfield: University of Illinois Press.

Irani, L. (2019). Chasing innovation: Making entrepreneurial citizens in modern India. Princeton University Press.

Iazzolino, G. & Stremlau, N. (2023). War, Peace and the Circulation of Mobile Money Across the Somali Territories. In: *Trade Makes States Governing the Greater Somali Economy*. Ed: Hagmann & Stepputat. p. 57.

Kitchin, R. (2023). Urban Data Power: Capitalism, Governance, Ethics, and Justice. Data Power in Action: Urban Data Politics in Times of Crisis, 21.

Latour, B. (1988). The pasteurization of France. Harvard University Press.

Lemke, T. (2009). An indigestible meal? Foucault, governmentality and state theory. In *Governmentality studies in education* (pp. 35-54). Brill.

MacKenzie, D.A., F. Muniesa and L. Siu (2007) *Do Economists Make Markets? On the Performativity of Economics*. Princeton University Press.

Mains, D. (2019). Under construction: Technologies of development in urban Ethiopia. Duke University Press.

Mann, L., & Iazzolino, G. (2021). From development state to corporate leviathan: historicizing the infrastructural performativity of digital platforms within Kenyan agriculture. *Development and Change*, *52*(4), 829-854.

McCann, E. (2013). Policy boosterism, policy mobilities, and the extrospective city. *Urban Geography,* 34(1), 5-29.

McElroy, E. (2020). Digital nomads in siliconising Cluj: Material and allegorical double dispossession. *Urban Studies*, *57*(15), 3078-3094.

McGuirk, P., Dowling, R., & Chatterjee, P. (2021). Municipal statecraft for the smart city: Retooling the smart entrepreneurial city?. *Environment and Planning A: Economy and Space*, 53(7), 1730-1748.

McNeill, D. (2017). Start-ups and the entrepreneurial city. City, 21(2), 232-239.

McDonald, D. A. (2012). World city syndrome: Neoliberalism and inequality in Cape Town. London: Routledge.

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*, 02637758231195962.

Mitchell, T. (2002). Rule of experts: Egypt, techno-politics, modernity. University of California Press.

Odendaal, N. (2016). Getting smart about smart cities in Cape Town. In *Smart urbanism: Utopian vision* or false dawn, 71-87.

Odendaal, N. (2011). Splintering urbanism or split agendas? Examining the spatial distribution of technology access in relation to ICT policy in Durban, South Africa. *Urban Studies*, *48*(11), 2375-2397.

Parnell, S., & Robinson, J. (2012). (Re) theorizing cities from the Global South: Looking beyond neoliberalism. *Urban Geography*, 33(4), 593-617.

Pieterse, E. (2021). Unlocking political potentialities. In *Global Urbanism: Knowledge, Power and the City*, 193-202.

Pike, A., o'Brien, P., Strickland, T., & Tomaney, J. (2019). *Financialising city statecraft and infrastructure.* Cheltenham: Edward Elgar Publishing.

Pinch, T. (2010). The invisible technologies of Goffman's sociology from the merry-go-round to the internet. *Technology and culture*, *51*(2), 409-424.

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. (2022). Acceleration, development and technocapitalism at the Silicon Cape of Africa. *Economy* and Society, 51(1), 46-70.

Pollio, A., & Cirolia, L. R. (2022). Fintech urbanism in the startup capital of Africa. *Journal of Cultural Economy*, *15*(4), 508-523.

Pollio, A. & Rossi, U. (2023, forthcoming). Urban Political Economy. In Vogel, R. K. (ed.), *Handbook of Urban Politics and Policy*. Edward Elgar.

Posel, D. (2017). A mania for measurement: Statistics and statecraft in the transition to apartheid. In *Science and society in southern Africa* (pp. 116-142). Manchester University Press.

Sadowski, J. (2020). The internet of landlords: Digital platforms and new mechanisms of rentier capitalism. *Antipode*, *52*(2), *562-580*.

Sassen, S. (2000). Digital Networks and the State: Some Governance Questions. *Theory, Culture & Society* 17 (4): 19–33.

Söderström, O., Blake, E., & Odendaal, N. (2021). More-than-local, more-than-mobile: The smart city effect in South Africa. *Geoforum*, *122*, 103-117.

Terrefe, B. (2022). Infrastructures of Renaissance: tangible discourses in the EPRDF's Ethiopia. *Critical African Studies*, *14*(3), 250-273.

Tudor, M. (2011) The implementation and adoption of a corporate performance management information system in the City of Cape Town Municipality: A case study using actor network theory [Doctoral dissertation]. University of Cape Town. Open UCT. https://open.uct.ac.za/bitstream/handle/11427/10723/thesis_com_2011_tudor_m.pdf?sequence=1&isAll owed=y

Von Schnitzler, A. (2017). *Democracy's infrastructure: Techno-politics and protest after apartheid.* Princeton University Press.

Wu, F. (2020). The State Acts through the Market: "State Entrepreneurialism" beyond Varieties of Urban Entrepreneurialism. *Dialogues in Human Geography*, 10 (3): 326–29.

Zhang, L. (2023). The Labor of Reinvention: Entrepreneurship in the New Chinese Digital Economy. Columbia University Press.