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FABRICATING SILICON SAVANNAH

By

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A thesis submitted for the degree of

Doctor of Philosophy

of the

University of Edinburgh

Abstract

This PhD research thesis offers an historicised account of Silicon Savannah, a digital technology entrepreneurship arena in Nairobi, Kenya. Silicon Savannah is an opportunity to study the appropriation of technology innovation and commercialisation models in a lower income, developing economy. Fieldwork took place over 2015-6, a period when this embryonic 'arena of development' (Jorgensen and Sorensen, 1999) is subject to scrutiny about its high, but largely unverified, hyped expectations. As a result, this thesis dwells on how actors develop strategies to adopt and adapt to processes over which they have no discretion. Actors in Silicon Savannah individually and collectively develop strategies and gaming systems for enacting legitimacy and attracting resources. The analytical frame reveals a dimension of persistent colonial modality inherent in the practice of global capitalism of which the digital economy and ICT developmental projects are a part. This is indicated in policy discourses of digital entrepreneurship that disclaim alternatives and multiplicities, and take for granted that there is a standardised typology of progress. The result is a paradox where entrepreneurs are incentivised to demonstrate alignment with discourses that might not reflect their experience.

The study aims to produce a 'view from Nairobi' by integrating the interpretive frameworks of the subjects of the study with the researcher's analysis. Thus, it relies on ethnographic interviews and observations, and historical reconstruction using resources preserved in internet-based repositories like weblogs, emails and social media. Through this empirical work, this study makes several contributions to knowledge: First, it produces a rich historical account of Silicon Savannah as a zone of friction between ecologies of knowledge and practice. In this way, it is conversant with ethnographies of policy implementation and academic research interested in interactions between received prescriptions and local milieu. Second, it its discussion of actors' strategic use of 'narrative infrastructures' (Deuten and Rip, 2000) and engages with the use of narrative in the production of and practices in arenas of

development. Third, it discusses the perverse incentives and moral hazards that can emerge from doctrinaire discourses, as observed in case studies exemplifying a range of organisations that have social good imperatives and/or emphasise profit-making. Doing so calls into question this presumed dichotomy. A fourth contribution is to the performativity programme. The thesis analyses how particular enactments act as proxies for capability in an arena characterised by sharp asymmetries. These asymmetries are reflected in the fact that the ability to bestow legitimacy and value is vested in distant geographies responsible for the promulgation of a particular digital entrepreneurship discourse and practice. A fifth contribution is to the coloniality school and the introduction of the methodological approach, 'Africa as Method', which provides that this kind of research cannot be accomplished without the integration of geographic and historical positionality. In the case of Kenya, this means paying attention to power topologies, political economy, governance philosophies, the fact of geographical hegemony and practices and relations characterised by the persistence of colonial modality. The thesis concludes with a contemplation of the future – a discussion that emerges from questioning whether a decolonised technoeconomic arena can flourish in a global digital economy that is underpinned by modernist philosophy.

Lay Summary

Digital technologies potentially allow any person, anywhere, to sell products and services to the rest of the world. In the last few years, policy makers have been predicting that Africa's fastest growing rates of connectivity will lead to radical improvements in welfare and economic development. The relative lack of critical, empirical research on the practices of African knowledge economies, however, results in policy and practice being guided by utopian ideas and examples from other places, rather than critical analysis. By critically engaging with how digital entrepreneurship is being conducted in Nairobi, Kenya, this research demonstrates the constraints faced by digital entrepreneurs and the strategies that they have developed to overcome them. This biography of Silicon Savannah is developed from observations of and interviews with entrepreneurs and other stakeholders in Nairobi. Their first-hand reports are supplemented by archived blogs, emails, and social media commentary. The inclusion of policy documents and perspectives of regular media produce a rich, multi-dimensional narrative. The aim was to produce a narrative that includes entrepreneurs' interpretations of their own experiences, rather than analysing them from a distance.

Inspired by the success stories emerging out of Silicon Valley, the digital entrepreneurs of Nairobi have named their technology scene, Silicon Savannah. Fieldwork in Silicon Savannah took place over 2015-6 at a time when many stakeholders were questioning its achievements, as a result this research is concerned with reconciling aspirations and narratives of success, with practices and outcomes. The analysis reveals that being an entrepreneur in a developing country located at the East Coast of Africa has historical and geographical implications. This is a geography that has traditionally been associated with risk and scarcity, and while digital technology can be a leveller and connector, the current model for the commercialisation of technologies is an amplifier of inequalities. Furthermore, entrepreneurs are rewarded for simulating parameters for success and value that have been developed in another context,

which limits the scope for the development of appropriate local solutions. The incentives also encourage entrepreneurs to produce stories that are based on what they think investors are hoping for, rather than what they know is possible.. The dissertation discusses the roots of Silicon Savannah, and concludes with a contemplation of the future—a discussion that questions whether an indigenous technoeconomic arena can flourish in a monopolistic, global digital economy.

Acknowledgements

I would like to thank the research participants and actors who inform this study. Observing, reading and hearing about their practices and thinking through their experiences has led to an expansion of my own point of view. I also want to express profound gratitude to all the scholars who have created bodies of work that have informed my thinking. Thank you for every discovery and dawning of awareness.

To my supervisor Professor Robin Williams who provided invaluable insight and good humour, I say a heartfelt: thank you. I also thank Professor Matt Harsh who was a constant source of generous support and suggestions.

Finally, and foremost, I am truly appreciative of my family who champion me emotionally and materially when I am depleted: My mother, Uncle DG and Kitui, in particular and Tom, who is now my family. I dedicate this thesis to them.

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

Signed ______________________ Date ______________________

Abbreviations

ANT	Actor-Network Theory
APC	Association for Progressive Communications
BoP	Bottom-of-the-Pyramid
EASSy	East African Submarine System
IMF	International Monetary Fund
ITES-BPO	Information Technology Enabled Services-Business Process Outsourcing
KANU	Kenya African National Union
KICTANet	Kenya ICT Action Network
KPTC	Kenya Posts and Telecommunications Corporations
SAPs	Structural Adjustment Programmes
SCOT	Social Construction of Technology
TEAMS	The East Africa Submarine Systems
WSIS	World Summit of the Information Society
WTO	World Trade Organisation

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1. INTRODUCTION

This is a historicised ethnography of Silicon Savannah, a digital technology commercialisation arena in Nairobi, Kenya. It addresses why the discourse of innovation and entrepreneurship has been adopted there and how it shapes Silicon Savannah. Silicon Savannah is located in Kenya's capital city, Nairobi. If infrastructure is representative of nation building, then Nairobi, the capital city, where construction is interminable and ever widening roadways appear to aggregate on top of each other in overpasses and subways, is the most Kenyan place. The city is the seat of government and the centre for commerce. The locus of the start-up arena is Ng'ong Road, (Figure 1) a busy thoroughfare that connects the central business district with suburbs to the south.

Source: GSMA Digital Entrepreneurship in Kenya, 2014

<u>Figure 1: Map showing location of the digital start-up community, their proximity to each other and distance from the CBD</u>

The research site is the Nairobi, Kenya that is interested in the economization of digital technologies. In recent decades, sites like these have proliferated around the globe. They are inspired by the experience of Silicon Valley and seek to emulate its success at generating commercial applications of digital technology. Silicon Savannah indicates this aspiration even with its name. This thesis shows that the tendency to look to EuroAmerican exemplars of progress for direction is a product of the imperatives generated by the coloniality of knowledge (Grosfoguel, 2002; Maldonado-Torres, 2008; Mbembe, 2000, 2016a). By examining the historical context of Silicon Savannah, the research shows how asymmetric global relations have shaped how digital technology production arenas are constructed.

Studies that consider the effects of digitisation and connectivity on societies often either argue that they have altered social relations or that they have reinforced pre-existing modalities (Miller et al., 2010). This study illustrates the continuities within the discontinuities which are only visible over the longue durée. The product is a situated account that critiques modernist discourses of progress and the role of technology in development. Fan (2016) cautions that using coloniality to analyse global social relations tends to lead to an overlooking of actors' agency. The argumentation in this thesis has sought to avoid this by evidencing the effects and contexts of coloniality through the strategic actions of the actors who actions are constrained by it. This research centres the perspectives of actors for whom Silicon Savannah and its legitimacy as an place of innovation and entrepreneurship is a matter of concern Observation of Silicon Savannah yields information about its modes of

practice and existence, but also about the global digital economy in which it is embedded. This chapter establishes terminologies, key concepts and arguments and finally, summarises the thesis' findings.

1.1 Narrative Infrastructures of Arenas of Technology Production

This research is about how discourses of technology production shape sociotechnical imaginaries and narratives of digital technology production in a developing country setting. There are numerous frameworks and concepts developed that can be applied to this subject, what it common to them is a particular philosophy of progress. In innovation discourses there is a tendency to "reinforce a rational control view of the product creation process" (Deuten and Rip 2000, p 69). Teleology and rationality make inherent power dynamics irrelevant as taken for granted expectations and outcomes are considered inevitable and even in everyone's best interest. At present, the prevailing assumption is that ideal approaches and trajectories follow the course taken by the advanced economies of the West. The developing country status of Nairobi, means that technology is often seen through lens of modernisation and 'catch up'.

STS scholars have noted that the validation of norms often stems from the legitimating infrastructure that has developed around them (Latour, 2010, 2007, 1993; Law and Lin, 2017; Stengers, 2018, 2010). This analysis is generally applied to the development of technoscientific paradigms and knowledge ecologies. I apply it to the processes of producing digital technologies. Legitimating infrastructure relies on discursive and rhetorical elements as expectations and promises need to be communicated (Zachry

and Thralls, 2007). Deuten and Rip's (2000) concept of 'narrative infrastructure' names the discursive element in socio-technical assemblages involved in the product creation process.

> By way of definition, we say: narrative infrastructure is the evolving aggregation of actors/narratives in their material and social settings that enables and constrains the possible stories, actions and interactions by actors. It can be seen as the 'rails' along which multi-actor and multi-level processes gain thrust and direction. When a narrative infrastructure evolves out of the stories, actions and interactions of the actors involved, actors become characters that cannot easily change their identity and their role by their own initiative (p 74).

Narrative infrastructure is as important as any other kind of infrastructure in a system of production It conveys norms, rules and guides action. Sometimes master narratives, or discourses, are produced (Deuten and Rip, 2000, p 74). This is partly through direct evidence of the applicability of the narrative through exemplar narratives that act as evidence of the truth of the master narrative (Zachry and Thralls, 2007). The narrative infrastructure of the knowledge economy, for instance, is a master narrative about the economic development and modernizing effects of economies built on technoscientific knowledge. The knowledge economy is narrativised as the apex of economic development and is generally associated with advanced economies in Western settings (Banya, 2008; Barro and Sala-i-Martin, 2004; Castells, 2000; Dahlman and Utz, 2005; Heeks, 2007; Porter, 1998). The discourses of the knowledge economy have robust infrastructures of experts and institutions that reward exemplar narratives and alignment. Actors are thus incentivised to produce these narratives.

My research objective to highlight actor's strategies in conditions of power asymmetry requires concepts that frame site of technology production in a manner that conveys relationality and how power imbalance may be embedded in those relations. Jorgensen and Sorensen (1999) developed the concept of 'arena of development' specifically to analyse market-oriented domains where "markets and users are being constructed, as well as products and technologies" (Jorgensen and Sorensen, 1999, p 425). Arena of development is:

> A cognitive space that holds together the settings and relations that comprise the context for product or process development that includes:
> · a number of elements such as actors, artefacts, and standards that populate the arena,
> · a variety of locations for action, knowledge and visions that define the changes of this space, and
> · a set of translations that has shaped and played out the stabilization and destabilization of relations and artefacts (Jorgensen and Sorensen, 1999).

Jorgensen and Sorensen (1999) are clear, however, that this metaphor has to have a material referent (p 410)—actual technologies, cities, institutions, users. It does not bind the analysis to a locality, yet still conveys spatiality. This is vital for an analysis of interactions that cut across geographic boundaries and across macro and micro scales. In a paper that is representative of scholarship in the sociology of expectations, Bakker et al. (2011) explain that beyond technology production there is another site, an 'arena of expectation'. Legitimacy in arenas of development is often derived from building expectations through storytelling and other rhetorical activities (Borup et al., 2006; Garud et al., 2014; Jones, 2017). This is a selection environment (Figure 2)

where communities that make technology (enactors) make certain promises and technoscientific claims, and other actors (selectors) decide which technologies will receive capital investment and other support based on their assessment of these promissory narratives (p 153). These arenas of development and arenas of expectation co-evolve (Bakker et al., 2011). An arena of development is necessarily an arena of expectation. Expectations are embedded in arenas of development and drive activity. Without the expectation that digital technologies and infrastructures will produce national economic development, inclusion and individual wealth, Silicon Savannah would not exist.

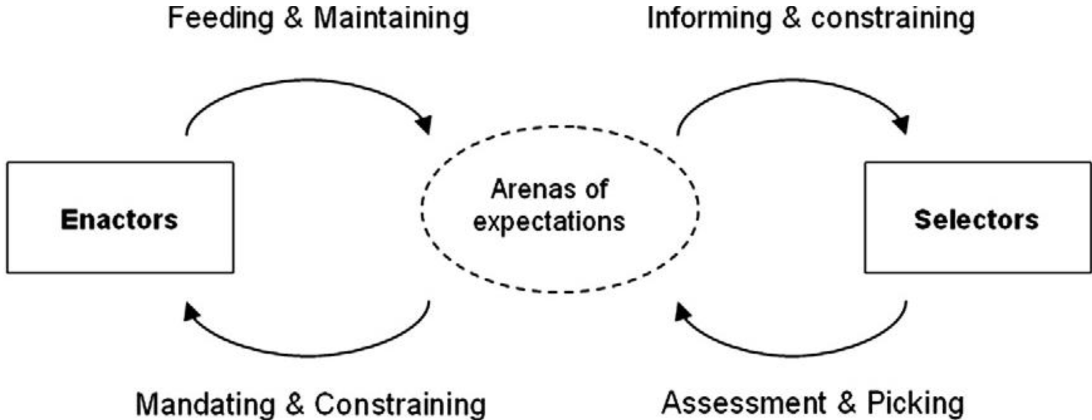

Figure 2: The relationship between enactors and selectors in arenas of expectation (Baker et al., 2011)

This attribute of arenas of development, that they are often promissory arenas, is particularly important to this study. Deuten and Rip (2000) assert that makers and

managers of technology production make promises while referencing a particular 'narrative infrastructure' that matches the expectations of the selectors in order to appear more legitimate. These concepts together allow for an analysis of why actors 'fabricate alignment' with narrative infrastructures. I use the term 'fabricate' to suggest that their stories are sometimes performative or for effect, and yet actors are also making and materialising.

While more popular frameworks for discussing technology production and commercialisation are devised with an inherent teleology, arenas of development is not. Jorgensen and Sorensen (1999) recognise that rather than being a linear process, technology production involves a variety of linked processes that cuts across scales; they aimed to develop a term that could encompass this variety (p 410). Scholarship on arenas of expectation and the authors of the paper on narrative infrastructure share the same underlying assumptions. Deuten and Rip (2000) also view technology production processes as non-linear and heterogeneous, but make the claim that there are incentives that make actors describe their technology production processes in linear and homogenous terms. Bakker et al. (2011) similarly recognise the variety of claims in the selection environment, and that the process is non-linear.

Bakker et al. (2011) note the political term 'arena' transmits the sense of heterogeneity in actor ecologies, interests, places and relations (Jorgensen and Sorensen, 1999, p 411). I note that it also gives the sense of a place where a game might be played. The scholarship of arenas of expectation indicates that a game emerges from an

environment where selectors do not take enactors claims at face value (Bakker et al., 2011). In the scenarios presented in this theses the issue is that it is taken-for-granted and at face-value that the structures, rationales and infrastructures of technology production are universal. In fact, in an arena contradictory interests co-exist. In the case of this research we highlight how profit and social good are often juxtaposed as rationales for ICT technology production. Despite their differences, however, they are underpinned by a modernist philosophy (Díaz Andrade and Urquhart, 2012; Ruckert, 2006).

> […] expectations frequently serve to bridge or mediate across different boundaries and otherwise distinct (though overlapping) dimensions and levels. Expectations are foundational in the coordination of different actor communities and groups (horizontal co-ordination) and also mediate between different scales or levels of organization (micro, meso, and macro—vertical co-ordination). They also change over time in response and adaptation to new conditions or emergent problems (temporal coordination). Likewise, expectations link technical and social issues, because expectations and visions refer to images of the future, where technical and social aspects are tightly intertwined. Finally, expectations constitute 'the missing link' between the inner and outer worlds of techno-scientific knowledge communities and fields. At the same time, expectations and visions are often developed and reconstructed in material scientific activities and disseminated in obdurate and durable forms. In a sense, expectations are both the cause and consequence of material scientific and technological activity. (Borup et al., 2006)

According to scholarship in arenas of expectations, expectations are the impetus for the materialisation of visions. They bridge geographies, change with time, and

mobilise resources (Van Lente, 1993). The excerpt conveys the resonance between the interests of the sociology of expectations and this research: analysis at different scales, the tools for mediation across boundaries, change over time, the 'missing links' between visions and materialities. Development arenas are, therefore, typically trading in ideas and promises (Borup et al., 2006; Garud et al., 2014).The sociology of expectations perspective, notes that enactors and selectors have different 'degrees of freedom' with respect to their relationship to the success of individual technologies (Bakker et al., 2011, p153) but do not emphasise the power gradient between selectors and enactors. Selectors/investors have (more) capital and this makes them more powerful in relation to enactors. In fact, holding capital often places one in the default position of selector. In Silicon Savannah, actors are usually raising the expectations of investor selectors outside of the local geography. The power differential is even greater between enactors in developing countries and selectors in affluent economies. This is a gap addressed in this thesis as it highlights power asymmetry, particularly that which emerges from the imperialism and coloniality or "modernity bias" inherent in discourses of ICT4D (Díaz Andrade and Urquhart, 2012) (see Chapter 2).

ICT4D is a dominant discourse/actor ecology in developing country arenas of development. In fact in this realm 'development arena' has a different meaning from Jorgensen and Sorensen's. It refers to the professionalised ecology where actors work to reduce inequality and poverty in countries that receive development assistance (Olivier de Sardan, 2005) . Both this concept and Jorgensen and Sorensen's area of development are relevant to this study and in order to differentiate between them, I

shall refer to the international development ecology as the ‘developmentalist configuration’, and maintain development arena/arena of development for discussing sites of technology production.

> The 'developmentalist configuration’... [is] essentially a cosmopolitan world of experts, bureaucrats, NGO personnel, researchers, technicians, project chiefs and field agents, who make a living, so to speak, out of developing other people, and who, to this end, mobilize and manage a considerable amount of material and symbolic resources (p 25).

Olivier de Sardan’s (2005) ‘developmentalist configuration’ terminology is a useful collective term for the actors—both local and international institutions and their discourses that are involved in advocating for and providing the resources for the international development agenda.

> When someone tells me “wow, you are in the centre of the African tech scene in Nairobi!”– I always reply “It is also the centre of the African NGO/donor scene”. That is the reality. My job is hence harder than when I go to South Africa and Nigeria given the competing narrative […] Nothing gets a donor’s heart racing than an African farmer being able to check market prices on their phone but pitch to them Africans creating their own game and they are suddenly not so interested. (Alliy, 2014a)

The excerpt is from blog in which a local investor discusses Nairobi as the location of regional and global headquarters of various international non-governmental organisations (INGOs). In Silicon Savannah, there has grown to be a sense that the developmental configuration and its rationales for technology production have had a negative impact on the selection environment of the arena of development.

Actors in Kenya’s arena of development are beholden to a particular narrative infrastructure that has been universalised. Their arena, thus, has to generate particular promises. Just like the research subjects in Deuten and Rip’s (2000) study,the practices of actors in Silicon Savannah contradict their claims. This thesis develops an explanation for the contradiction between narrative and practice. It demonstrates that actors are engaged in appropriating, challenging and subverting received models for technology commercialisation (Shrum, 2005). Marchant (2018) has written a dissertation on the entrepreneurial narratives of Nairobi’s entrepreneurs, concluding as I do, that some of these narratives are designed to appeal to the mythology of the innovator entrepreneur rather than to convey facts about the firm and its products. I argue that they have to act in this way because of the constraints placed on them by global power asymmetries. In Nairobi’s arena of development we can reflect on the global narrative infrastructure of the knowledge economy and how actors here are connected to it.

1.2 Locating and Appraising the Discourse

I am interested in how the existence of Silicon Savannah affirms or challenges existing discourses on technology and progress. Today, the technoscientific knowledge economy is considered the ideal socioeconomic arrangement. Several, policy and academic discourses contribute to an overarching meta-narrative about how the innovation-knowledge economy is ideal and how to achieve it. The development of innovation as an area of thought and analysis is attributed to Joseph Schumpeter who

combined aspects of economics, history and sociology to study cycles in the socio-economic realm and the behaviour of firms (McDowall, 2014)(Martin, 2012; Fagerberg et al, 2012; Fagerberg & Verspagen, 2009; Pavitt, 2006; Lundvall, 2007, Schumpeter, 1939). Schumpeter identified 'creative disruption' by entrepreneurs as an engine of economic growth in works authored in the thirties and forties (Martin, 2013; Pavitt, 2008; Lundvall, 2007).

Today, Silicon Valley is the idealised exemplar of a sites of innovation and the economisation of knowledge. It exhibits attributes of discourses on innovation. Namely, infrastructural investments by nation-states (Fagerberg et al., 2018; Freeman, 1995; Lundvall, 2010), clustering of skills and resources (Cooke, 2001; Engel, 2015; Porter, 1998), and creative entrepreneurs challenging incumbents (Christensen, 2013; Christensen et al., 2017). Silicon Valley is also the site that exemplifies the promise of internet connectivity for widening access to global markets and materialising modern, global cities in record time (Carver, 2010; Engel, 2015; Etzkowitz and Leydesdorff, 1995; Heeks, 2007; Porter, 1998; Saxenian, 2006, 1994; Steiber and Alänge, 2016; Wentland, 2016). These attributes are assumed to be universal, and Silicon is simply exemplary of them; an outlook that has received widespread acceptance and is generally taken for granted (Shipley, 2010; Mytelka, 2000) except in academic critical social science discourses.

A consequential discourse for this thesis, on the political economy of progress, becomes globally dominant in the eighties. This discourse emerges from a world view

that is particularly EuroAmerican. It reflects the popular and policy success of the neoliberal perspective on socioeconomic thought and policy (Birch and Siemiatycki, 2016; Harvey, 2005, 2006; Hecht, 2011; Mbembe, 2016a; Wiegratz, 2010) It results in a perspective on approaches to economization and economic practices that privilege capital inputs over other factors of production, and reduce the role of national governments in managing economies (Carnoy and Castells, 2001; Krishna, 2009; Mkandawire, 2001; Moisio, 2019). With respect to STS discourses on this subject, the development of evolutionary economics by Nelson and Winter in 1977 is a boon for researchers of social studies of science and technology. Nelson and Winter importantly described innovation processes as a factor of social mechanisms (Martin, 2012). This is a critique of neo-classical economics, but one that does not necessarily challenge its underlying philosophy of progress.

That these discourses are taken for granted then limits how knowledge economies can be imagined and materialised, and what kinds of technology production processes should be valued and enacted in societie. The conflation of economic growth with technology adoption and commercialistion (Demirel and Mazzucato, 2012) has resulted a problematic logic for development that substitutes what we know, for what we expect and encourages homogeneous, convergence of social systems (Díaz Andrade and Urquhart, 2012; Shrum, 2005). Societies are constrained in terms of imagining what technologies should be able to do for them.

The dominant, mainstream discourse is underlain by a modern subjectivity and global political economy where the innovation/knowledge economy is the height of modernity (Cooke, 2001; de Ferranti et al., 2002; Fagerberg et al., 2018; Freeman, 1995; Hart, 2003; Sorlin and Vessuri, 2006; Srinivasan et al., 2014). Therefore, the discourse that celebrates the emergence of Kenya's Silicon Savannah is underlain by a particular view of socioeconomic development, and innovation and entrepreneurship as an object and means for achieving it. The discourse is so taken for granted is that the strongest critique within it, is that it fails to be inclusive enough of poor and marginalised people (Dolan and Rajak, 2016; Donner, 2015; Foster and Heeks, 2013; Unwin, 2017). I, and others, argue that under the current modality, inclusion means that actor agency and identity is suppressed and their knowledge and modes of existence undervalued (Amin, 1972; Díaz Andrade and Urquhart, 2012; Escobar, 1995; Grosfoguel, 2002; C. Katz, 2004; Mkandawire, 2015; Ndlovu-Gatsheni, 2018; Said, 1977; Shrum, 2005).

1.3 Mavhunga (2017) explains that what we take for granted as universals, are actually norms that are particular to certain places. This reflects persistent age-old ideas and assumptions about the history of modernity—that it is related to the global spread of capitalist relations and the ahistorical notion that some places are sources of progress, and others are sinks (Anderson, 2017; Fan, 2016a; Latour, 2007; Watson, 2014). Scholarship across a variety of disciplines has demonstrated the inaccuracy of this view. Silicon Savannah represents what Tsing (2005) would call a zone of 'friction', an interface where taken-for-granted universals are interacting with local contingency. This interaction produces unique iterations of the received knowhow. Are there alternative arenas of development?

In the previous section I explain that dominant modes of digital innovation and entrepreneurship are globalised, but particularly EuroAmerican in their origins and perspectives (Draper, 2011; Suchman, 2011; Suchman and Bishop, 2000). I argue that the dominance of these discourses constrains the emergence of localised and contextualised social technical imaginaries and rationales for technology production. The question is whether divergent, localised alternatives would exist if there were no forces pushing geographies towards sociotechnical convergence. It is difficult to prove a counterfactual, however, the contention of this thesis is that even as development arenas aim to be seen as legitimate by replicating the dominant, universalised exemplars, they produce unique sociotechnical regimes that challenge the maxims of the dominant models. By observing these divergences and subversions, we can theorise that uses of technoscientific knowledge and the sociomaterialities they

produce might be even more unique and varied if there were no incentives for convergence.

The experience of the digital technology production system of Silicon Valley, specifically, has been distilled into a singular mythology that is treated as a universal methodology for innovation (Avle et al., 2017; Katila et al., 2017; Suchman, 2011). Innovation systems theory by all indications, is sure that it engages with naturalised phenomena, and therefore in its ability to illustrate performativity in the field. However, one could describe it as a 'circular reference' or tautology given that those field sites are the source of the theory. Pollock and Williams (2016) note that "there seems to be a gap between what might be thought of as 'espoused' performativity and the studies of performativity in practice" (p 22). This research is a study of performativity in practice.

It is because of this research that I no longer take the universality of discourses for granted. The research design for a preceding course of masters' research is illustrative of my progress. In that piece of research, I was critical of characterisations of Silicon Savannah that cast it as an embryonic arena of development, rather than as an alternative form of innovation arena. In my view, Silicon Savannah was the idiosyncratic outcome of the constitutive appropriation and local contextualisation of innovation discourses. I was, however, uncritical about innovation and took its universality for granted. During the master's research, I conducted desk-based research that compared Silicon Savannah to two models for technology development

and management developed by innovation studies scholars[1]. The aim was to illustrate how different contexts produce alternate sociotechnical systems that yet achieve similar outcomes i.e. innovation. In the course of doctoral research, direct observation of the extent to which actors have to fabricate a particular kind of performance of economization and entrepreneurship leads me to question a) the assumed universal appropriateness of outlooks on innovation and its imaginaries and b) the reasons why actors are constrained to a particular set of frameworks in the first place. A modernity/coloniality lens provides me with the conceptual frameworks to argue that modernising logic and colonial modality, mean that actors are constrained in the imaginaries that they develop and the practices that they implement.

Various authors remark on the contingency and heterogeneity of technological progress (Bijker et al., 1987; Pollock and Williams, 2016); the intertwining of geography-centred histories of innovation (Hecht, 2011; Katila et al., 2017; Nkwi, 2015; Odumosu, 2009; Park, 2017); the utility of situated knowledges (Haraway,

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[1] The two frameworks, Carlsson and Stankiewcz's Technological Innovation System model (Carlsson and Stankiewicz, 1991) and Geels and Schot's and Transition Management process (Schot and Geels, 2008), are underpinned by different theoretical logics. By drawing comparisons between Silicon Savannah and these frameworks, I aimed to demonstrate how Silicon Savannah was similar to or different from other technology development arenas.

1988) and thus, provide alternative views of modernity (Harvey, 1989; C. Katz, 2004; Latour, 1993). The implications is that technologies developed in situ are likely better at resolving localised problems because they will be shaped by the environments in which they are designed (Campagnolo et al., 2015; Mavhunga, 2017a).

What is seen as an alternative narrative actually emerges from the same underlying rubric. This the narrative infrastructure of innovation in developing countries that frames it as producing locally relevant technologies whose value lies in how well they foster inclusion into digital society(Foster and Heeks, 2013; Graham, 2014; Unwin, 2009, 2017). Inclusion often aims at facilitating wider access to tools, mode of existence, and knowledge or 'development'. This often translates to convergence towards EuroAmerican norms of technology production and technology use cultures (Shrum, 2005).

There are incentives for claiming affiliation with the latest embodiment of sociotechnical modernity. Hence, one sense of the term 'fabrication' used in the title of this thesis is actors manufacturing convergence. The other sense conveys the fact that actors are indeed producing an arena of developmenteven if its attributes do not match its claims.

Mavhunga (2011) suggests that rather than seeking to answer whether there are localised modes of innovation, we should start with the assumption that innovators already exist in Africa.

> As I see it, what has been lacking in the development discussion regarding Africa is a view that recasts Africa as a variegated site of innovation (not humanitarian desperation). To approach Africa as a domain of innovators would avoid a wholesale import of bad ideas, policies and technologies that have not helped the continent over the last century, since the beginning of colonial rule (Mavhunga, 2011, p 81).

This is not as straightforward as Mavhunga suggests because the current parameters of innovation blinkers us to what alternatives can be (Suchman, 2011; Suchman and Bishop, 2000). Do arenas of development include web designers, and the mobile phone repairmen (Houston, 2013), who make a trade in Nairobi?. Are arenas of development only concerned with cutting edge, technoscience? This research illustrates how these outlooks are structured by the global discourses. Miroswski & Sent (2008) wonder:

> […] will the multiplicity of social trajectories of the provisioning of science tend to converge to a single, worldwide model of commercialized, globalized science in the twenty-first century? (p 639)

The answer so far is, yes. The critique developed in this thesis is that the limitations of the over-arching discourses of sociotechnical development does not include a variety of imaginaries and materialisations of sociotechnical arenas.

1.4 Analysing Silicon Savannah

This study is invariably an analysis of the social shaping of an arena of development (MacKenzie and Wajcman, 1999; Stewart and Williams, 2002). In order to conduct this analysis, I need to take the view from Nairobi. This is actor-centred research, which takes place from the vantage point of Silicon Savannah and is a product of a

year-long ethnography there. I make the argument that in order to understand how this development arena operates in 2016, we have to understand the historical context and the events and interactions that shaped it. Silicon Savannah is a product of actions taken in the past and also of actions taken in anticipation of the future. Within the historical context, there is a spatial component. The fact that Silicon Savannah is located in Kenya translates into particular histories, sets of requirements, imperatives and expectations. Conducting this research required reflecting critically on globally dominant discourses of development and progress.

The coloniality of knowledge lens is yet to be applied to the digital economy. The digital economy is a subset of the so-called knowledge economy where technoscientific knowhow is economized. Decolonial research is a methodological stance. In order to understand the trajectory of Silicon Savannah, one has to understand Kenya's status as a developing country. In particular, the extent to which the nation aspires to modernity, and how its understanding of modernity is shaped by received logics. The findings speak to this and do not take it for granted.

Innovation studies tends to take geography into account when drawing comparisons between places and levels of economic and social development (Fagerberg et al., 2018; Freeman, 1995; Lundvall, 2010). Thus, researchers have studied the effects of resource scarcity on innovation trajectories (Barbier and Homer-Dixon, 1999; Srinivas and Sutz, 2008) and effect of education attainment or lack of it (Adeogun, 2003; Angus et al., 2004; Evoh, 2007) but not many have considered the effect of historical asymmetry

and how it plays out in the present and in differences in economic development. This study is located within the field of post-colonial STS, which takes geohistories into account (Anderson, 2017; Chen, 2010; Fan, 2016a; Harding, 2009; Latour, 2007; Suchman, 2011).

The decolonial approach "entails deep questioning of 'received' knowledge and critical engagement with the politics of knowledge production and dissemination" (Ndlovu-Gatsheni, 2018, p 81). As Mavhunga suggests, a different kind of analysis "requires not merely looking at how people respond to incoming things, but placing the latter's arrival, meanings, knowledges, and materialities within the locals' technological longue durée" (Mavhunga, 2017, p 4). I am interested in contributing to "a critical perspective constantly concerned with the geopolitics of knowledge and the multiplex configurations of power behind the regimes of theoretical and empirical legitimation wherein sociological thinking takes place" (Ascione and Chambers, 2016, p 303). This process involves privileging the standpoint of Nairobi, and the actors within it.

1.5 The Findings and Contribution of this Research

Telecommunications policy in the eighties and nineties are structured by the structural adjustment programmes and impetus for globalisation which liberalise national markets around the world. Power geometry and coloniality are evident in the dynamics between the Kenyan state and the developmental configuration. The coloniality lens can lead one to overlook (subaltern) agency (Fan, 2016a), but there is the other danger

of underepresenting power asymmetry (Johnson, 2003). The argumentation in this thesis has sought to avoid this by evidencing the effect of coloniality through strategic responses to what I have termed, constrained agency. Agency is assumed but constraints to it are made evident through historicising the power asymmetry that shapes action. Kenya's state regimes and their philosophies of development are subject to the EuroAmerican doctrines of the global developmental configuration (Anderson, 2009; Carnoy and Castells, 2001; Hecht, 2011; Massey, 2002; Mbembe, 2000; Mkandawire, 2001; Shrum, 2005; Tsing, 2005). Along with implementing structural adjustment by liberalising its telecommunications market it also required to adopt mindsets and knowledges sets that go along with these processes.

The state is to view its own practices as neopatrimonial (Mkandawire, 2015, 2001) and cede sovereignty over its policies to the developmental configuration, while achieving competitive advantage. Methodologies for creating sites of innovation at an industrial scale like Etzkovitz and Leydesdorff's (1995) 'triple helix' offer the state a way to maintain a role in industrialisation while applying the reforms. Attempts to implement theories of competitive advantage demonstrate reveal the constraints that exist in the global economic system framework. While the state can deploy its own resources, under the global economic system framework in which theories of competitive advantage emerge, discretion lies with multi-national corporations. An imaginary of industrialisation that relies on location of global companies cedes too much power to those firms and embeds power asymmetry.

The developmental configurations believes that the globalising world system should include as many people as possible within it. A softened approach to global governance (relative to the stringent conditionalities of the structural adjustment programmes) aims to develop consensus around modalities of global governance and the global economy. The governance of the internet is a site at which we can observe the development of multistakeholder processes to manage consensus around this issue. A Kenyan organisation called KICTANet is formed to represent various interests in the ICT sector. Their insertion into global processes for decision-making is evidence that (benevolent) liberal approaches are also constraining. They also represent a process of convergence towards a particular mode of existence. In particular these approaches, stringent or otherwise represent convergence towards modes of economisation that valorise capital.

An ICT arena of development that emerges from the liberalisation of the telecommunications sector, Silicon Savannah, is also subject to the global capitalist economy (Moisio, 2019). The historicization of this analysis thus reveals the continuities that permeate through time, and across levels. The arena also has to be attuned to the prevailing discourse on progress, which in the case of digital technologies falls within the knowledge economy perspective. Also like the state, the arena is reliant on external selectors for legitimation and capital. These actors have different constraints from state, one could interpret them as having much less to manoeuvre but flexibility in the manner in which they become attuned and develop strategies to survive within the prevailing frameworks for digital technology

production. This study aims not to take modes of digital technology production for granted. It assumes nothing about rationales for technology production. This means that when I observe practices in Silicon Savannah that deviate from what is expected, I question why the expectations exist, and what motivates the practices. I treat the question of motivation as empirical. This research analyses why the prevailing discourses that shape digital innovation are indeed taken for granted in most academic discourses on the subject.

Coloniality is the reason that macro and micro scale actors have enact particular sociotechnical imaginaries. These imaginaries are said to be global but they represent the experience of EuroAmerican locales. The adoption of Silicon Valley business knowledge, for instance, has led simply to what some scholars view as mimicry in arenas of development around the world (Carver, 2010; Hill and Mudambi, 2010; Katila et al., 2017). This a strategic mimicry that is a response to incentives embedded in the narrative infrastructure. I argue that while the performances might be perceived as mimicry, they produce an arena of fabrication, which is a market for these performances.

First, I develop a conceptualisation of constrained agency for use in this context. Nairobi's status as a capital city of a developing country has implications for macro-level and micro-level actors alike. The imperative to 'catch up' with developed nations, using their methodologies and perspectives on progress is shown to be the governing assumption in the variety of discourses that are brought to bear in this

analysis. In Kenya, and elsewhere, proponents of digital technologies promise that these technologies and infrastructures can deliver wider economic development and the uplift of individuals from conditions of deprivation and marginality. But macro and micro-scale actors are constrained by certain parameters. They are expected to reproduced particular rationales for technology production that fit within the narrative infrastructures of ICT4VC and ICT4D. The narrative infrastructure of ICT4VC emphasises profits and consumers, and venture capitalists are the selectors. ICT4D on the other hand emphasises inclusion of users, particularly poor and marginalised users. After framing constrained agency, I evidence that both these narrative infrastructures are embedded in modernising philosophy of progress because of how actors have to become attuned to them. Fourth, I discuss how these arenas of expectation are processes for mutual legitimation. While Valuation and legitimation of the local arena is dependent on an external gaze. Discourses about progress are inherently political and they require validation to sustain themselves in contested marketplaces of ideas. Third, I illustrate how actors deploy strategies of alignment, resistance and fabrication to draw benefits from mutual legitimation regimes.

The structure of Nairobi's telecommunications sector in 2015 is rooted in the history of telecommunications as an arena for effecting shifts in the global, ideological political economy. The historical period is divided roughly according to governmental regimes (Table 1).

Table 1: A Summary of the Discursive and Political Regimes that Interact in the Thesis

	Moi regime	**Kibaki Regime**	**Fieldwork Period**
Time	Before 2012	2002-2013	2015 - 2016
Governance Philosophy	Nyayo Philosophy (regarded as neopatrimonial)	Technocratic self-sufficiency	Too soon to recognise a coherent doctrine
International Development Discourse	Neoliberal Structural Adjustment Programmes	Neoliberal/Liberal Globalisation	Neoliberal/Liberal Globalisation

Figure 2: Representation of historical contingencies that impact the analysis

The government of President Moi, cast along with other African states, as neopatrimonial in discourses of international development, resists the structural adjustment programmes that requires liberalisation of the national telecommunications sector. The subsequent government of President Kibaki attempts to implement a programme of reforms and industrialisation. Doing so reveals ideological alignment with prevailing discourses on stages of development and modernisation. This is evidenced by the government's attempt to implement a process of establishing national competitive advantage through IT services sector. This is the first example of how

selectors have discretion over enactors choices, and ultimately over outcomes in the selection environment (where the selection environment is the market for IT services sectors). The multinational corporations that would anchor an IT services industry do not locate in Nairobi. Yet, the improvements to ICT infrastructure mean that those corporations can tap into local markets from a distance. Coloniality in global digital society is further evidenced by KICTANet's insertion into the international internet governance landscape through discourses around multistakeholderism and a managed consensus. KICTANet's existence legitimates the APC, an international organisation that advocates of ICTs. KICTANet's lone voice, however, has no traction in this arena. In a different context, but still within the constraints of the global political economy, the state and KICTANet have much more relative agency. The Kibaki government industrialisation project that continues to centre the role of the state, despite the interests of the Americanised international system. It rejects a closed access undersea cable infrastructure and finances its own cable. Within a new governance regime, KICTANet is able to be knowledgeable and to influence policymaking.

Microlevel actors have limited agency on their own. As a collective, they form the Silicon Savannah arena of development. Some actors measure the quality of their own enactments based onthe preferences and expectations of investors. In this way, local actors are foreclosing on the prospect of their unique knowledge, experiences and arenas being recognised as alternatives to dominant regimes. In the end, these arenas are cast as failures or instances of hype because the ideal is not universal.A novel finding is that the structures of legitimation of the knowledge economy incentivise

perverse strategies that 'game' the arena of developments selection environment. Actors fabricate entrepreneurial performances and/or narratives to match the narrative infrastructures. Ultimately, they do so because their enactments of digital entrepreneurship are not considered ideal, and because they need to develop a livelihood out of their activities. This research pushes scholarship on digital entrepreneurship to rethink how it characterises success and structures arenas of development more generally so as to include new sites of technology production. Importantly, it leaves room for alternative imaginaries of progress. In these imaginaries progress is a decrease in the power differentials between global actors.

1.6 What to Expect in Upcoming Chapters

The previous sections have alluded that the analysis is an ethnography, but one that is located in a historical analysis. The empirical chapters: 4, 5 and 6 begin with a look back at the trajectory of the telecommunications sector in Kenya, and illustrate the constraints on macro-level actors that emerge from the developing country status and global power asymmetry. The balances of power that structure those processes are then shown to affect the arena of development/expectation in present day. At this point, the analysis foregrounds micro-scale actors and backgrounds the government and other stakeholders operating at the national level.

The chapter that immediately succeeds this one, Chapter 2, elaborates on the theoretical lenses that are relevant for this study. The coloniality of knowledge is the analytical and explanatory perspective at the core of this research. Chapter 3 discusses

the methodology and methodological considerations that guided data collection and analysis. One of the research's primary contributions is taking up the challenge of operationalising decolonial research (Chen, 2010; Fan, 2016b; Hecht, 2011; Latour, 2007; Mavhunga, 2017b; Ndlovu-Gatsheni, 2018; Sabaratnam, 2017). As a study of the construction of sociotechnical arenas in situ in Nairobi, it responds to Mavhunga (2017), who asks what science technology and innovation studies mean from Africa. It meets the challenge by using a variety of epistemic tools in order to construct a multi-level, multi-actor analysis of Silicon Savannah that is actor-centred and takes into account geohistorical positionalities.

The empirical chapters are written chronologically even though I undertook the empirical work in the opposite order. The research is designed to reveal how actors in Silicon Savannah appropriate the discourse of innovation and entrepreneurship in order to construct an arena of development. Chapter four discusses the liberalisation of the telecommunications market towards the end of the twenty-four year Moi regime. It also includes a discussion on the chosen mechanism for including local institutions into global governance regimes. The chapter challenges the concept of 'inclusion' into global structures and systems that are inherently designed in the image of EuroAmerica. Chapter five analyses the political economy of the ICT infrastructure development during the ten-year term of the Kibaki presidency. It discusses the rationales, policies and discourses behind infrastructural development and analyses the failure of certain projects to meet expectations. Chapter six covers the present, and the sociomaterialities of the Silicon Savannah arena of development, and the narratives

that are competing to shape it. The chapter familiarises the reader with the archetypes and constraining expectations of arenas of development and how they constrain enactment of digital entrepreneurship. Chapter seven continues the discussion on how narrative infrastructures that emerge from particular perspectives on progress constrain enactments of digital entrepreneurship. Actors in this chapter are seen to implement particular strategies that game the selection environment. The concluding chapter discusses the implications of the research and includes a contemplation of the future of Silicon Savannah, and the future of this research. The themes that emerge from the data produce a narrative that tells us about how hegemony and agency interact to shape action, identity and narratives and the meso-level of the arena and micro-level of individual actors. The empirical analysis reveals the history of colonial modality that continues to shape the trajectories of actors in the Silicon Savannah development arena.

2. COLONIALITY AND THE KNOWLEDGE ECONOMY

Analyses of arenas of development take their inherent power dynamics for granted—they note the different roles of various actors and how they interact but view these dynamics as a matter of fact, rather than as matter of concern. For instance, it is taken for granted that there are actors that have capital and act as selectors and legitimators, and that other actors who utilise and manage technoscientific knowledge, create expectations and make promises (Bakker et al., 2011; Borup et al., 2006; Deuten and Rip, 2000; Jorgensen and Sorensen, 1999). If we apply a critical social lens to the relations in these arenas, we begin to understand the effects of power gradients on normative discourses and practices. This then opens us up to the possibility that different arrangements could lead to alternative approaches and outcomes.

Fabricating Silicon Savannah is an analysis the inherent problem of assuming universality in the application of science and policy. It advocates for a more expansive view of 'modernity', which includes all the modes of existence in this current time period. Rather than its continued association with the EuroAmerican geography (Dei and Anamuah-Mensah, 2014; Mignolo, 2017).

> Modernity, once re-conceptualized, connects to globalization in the way that Wittrock (2000) sees it, modernity as "a common condition on the global scale that we live in" (p. 58). All peoples are seen as 'modern' and with equal contribution to modernity. (Dei and Anamuah-Mensah, 2014, p 34)

While a number of lenses could be applied to analyse the association of progress and innovation with certain geographies, the specific lens that I use is that of coloniality. Kenya is a post-colonial place and a developing country which makes this lens particularly pertinent.

> […] coloniality is a global power structure. It is different from colonialism because it 'refers to long-standing patterns of power that emerged as a result of colonialism, but that define culture, labour, intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations' (Maldonado-Torres 2007: 243). Coloniality 'is maintained alive in books, in the criteria for academic performance, in cultural patterns, in common sense, in the self-image of peoples, in aspirations of self, and so many other aspects of our modern experience. (Ndlovu-Gatsheni, 2015)

While coloniality has been used to investigate a number of topics (Alvesson and Karreman, 2011; Ascione, 2016a; Lentin, 2019; Mbembe, 2016a; Ndlovu-Gatsheni, 2018; Sabaratnam, 2017), it has not yet been applied to a digital economy setting. This chapter explains how the coloniality explains the evidence generated by this research. Data collection and preliminary analyses guided my reading of the literature. This in turn led to an evolution of the theoretical perspective and re-shaped how I interpreted the data. The discussion that follows explains these analytical shifts and the literature that influenced them.

Under United Nations and World Bank classifications, Kenya, a country of almost 50 million people, is a low-income developing country and ranks 142nd on the human development index (UNDP, 2018). With a GNI (gross national income per person) of

$2961 (HDI, 2018). People under 30 years old make up over 70% of the population (see Table 1). The development discourse for developing countries is embedded in the goal of ensuring the well-being of all citizens.

Table 1: Kenya's Demographic Data

INDICATOR	
Population	49.7 million
Poverty rate	45.9%
GINI coefficient	0.48
GNI	$2961
GDP	$141 billion
GDP Growth Rate	5.1%

Source: UN, HDI 2018

On one hand this means that there is an emphasis on technology production that serves poor people (Foster and Heeks, 2014, 2013) and on technology production as industrial development, which is often framed as facilitating 'catch up' to affluent economies (Heeks, 2007). Thus, the trajectory of the telecommunications sector in Kenya is not independent of developing country status. Any economic activity in a developing country is generally assessed in these terms.

This thesis joins a broader argument taken up in a variety of disciplines interested in critical social studies that there is nothing natural or inevitable about currently taken-

for-granted constructions of progress (Amin, 1972; Harding, 2009; Harvey, 2006; C. Katz, 2004; Latour, 2007; Law and Lin, 2017; Lentin, 2019; Marx, 1976; Massey, 2002; Mbembe, 2001a; Mkandawire, 2001; Morozov, 2012; Ndlovu-Gatsheni, 2015; Stengers and Massumi, 2008a; Wallerstein, 1995, 2004). My contribution is to illustrate through the digital economy arena in Kenya, that the ability of geographies to 'progress' is hampered by requiring them to adhere to a modality that is inherently asymmetric and more likely to exploit, than empower them.

The first section, 2.1 frames the analytical approach as an exercise in provincializing science and technology studies (STS) and therefore translating in a non-Eurocentric context. Paradoxically provincializing STS, is what allows us to make it universalisable. Section 2.2 reviews critiques of global development discourse and practice and relates it to innovation and entrepreneurship imperatives and this research. Section 2.3 introduces the coloniality of knowledge and its application in this thesis, as the analytical lens of this thesis. A significant empirical contribution of this thesis is demonstrating how actors in Nairobi manage the global, structural asymmetries in knowledge production. Section 2.4 introduces the concept of constrained agency which is the explanatory device through which we discuss actors responses to their environment. This discussion leads us into Chapter 3 which is the methodology chapter that seeks to operationalise this approach.

2.1 Provincialising STS: A Post-colonial and/or Decolonial Approach

Science and technology studies has produced scholarship that is ideal for this study (Latour, 2010; M'charek, 2013). Yet, I along with other scholars in STS have realised that in order to apply STS perspectives, I have to reckon with the fact that STS scholarship, having been produced Western locales is not necessarily universal in its outlooks and assumptions (Fouché, 2006; Winner, 1993). I, therefore, engage with the STS precepts that fit with my particular research setting and those that are useful if modified (Chakrabarty, 2008; Harding, 2011, 2009; Mavhunga, 2017a; Prakash, 1999). The process for this project can be summarised as "provincializing Europe while deprovincialising Africa" (Ndlovu-Gatsheni, 2018, p 80).

Critiquing the hegemony of the Euro-American analytical frameworks, including STS, is already an emerging scholarly project within STS (Anderson, 2017; Latour, 2007; Law and Lin, 2017; Mavhunga, 2017a; Suchman, 2011; Wajcman, 1991).

> Feminist theory, in conversation with queer, postcolonial and decolonising science and technology studies, have developed a relational approach to ethics, which asks whose knowledge counts—and in what ways—in technical domains (Amrute, 2019, p 57).

Even after social constructionists have reckoned with how their characterisation of social groups can exclude marginalised people (Winner, 1993) they still may exhibit techno-determinism and prescription (Gagliardone, 2016; Winner, 1993) when it discussing trajectories of technoscience in geographies outside of Euro-America

(Anderson, 2017; Fan, 2016a; Harding, 2009; Mavhunga, 2017a; Sorlin and Vessuri, 2006). Winner's (1993) critique that "insofar as there exist deeper cultural, intellectual, political, or economic origins of social choices about technology or deeper issues surrounding these choices, the social constructivists choose not to reveal them" remains relevant. STS along with broader sociology, has come under scrutiny for uncritically viewing theoretical frameworks developed in and about for Europe and the United States of America as universal (Anderson, 2017, 2002; Bhambra, 2007; Harding, 2011; Law and Lin, 2017). Analyses of African sites, in particular, continue to engage in 'presentism' (Mbembe, 2016) which reduces to comparing African locales to a modernist ideal of progress. Sandra Harding's *Introduction to The Post-Colonial Science and Technology Reader*, (2011) is a treatise that STS should not be another "epistemologically underdeveloped" area of study. These are disciplines that are unable to locate themselves in history (2012, p 20) and unable see themselves as part of shaping, diffusing and reinforcing problematic worldviews about the nature of modernity (Fouché, 2006; Harding, 2011).

> As productive as these approaches have been for the study of dominant technological voices, products, and experiences, they have been equally unproductive for those traditionally marginalized […] actor-network approach "is not very good at explaining why some actors are excluded from the game and why the playing field is not level ... for this reason categories such as race, class, gender, colonialism, and industrial interests tend to be absent from actor-network analyses. (Fouché, 2006, p 645)

It is not difficult for STS to be reflexive. There is a long history of STS scholarship interested in situated analytical lenses and standpoint theory (Haraway, 1988; Latour and Woolgar, 1986; Law and Lin, 2017; Wajcman, 1991; Winner, 1993). STS is an ideal disciplinary field in which to produce an analysis that is developed in situ and is interested in the vantage point of the subject (Bijker et al., 1987; Latour and Woolgar, 1986; Pinch and Bijker, 1984; Sismondo, 2010). The extension of this analysis to actors who might not necessarily be viewed as marginal—the state and digital entrepreneurs—demonstrates how power and agency are contingent and shaped by context.

The STS symmetry principle, which in some cases can have a problematic flattening effect, is particularly useful for this analysis. It allows us to treat cognitive schemas with impartiality (not parity) (Law and Lin, 2017; Sismondo, 2010) as illustrated by Law and Lin in their research into Chinese medicine. Parity would mean that we do not acknowledge that knowledge claims and knowledge production practices vary in terms of efficiency, depth of analysis, rigor, and comprehensibility (Appiah, 1991; Mbembe, 2016a). Impartiality means that the quality of the knowledge claim and its explanatory abilities are not relevant, if it has status as a body of knowledge that shapes societies (Appiah, 1991; Latour, 2010; Stengers, 2018, 2010; Watson, 2014). Using these perspectives, Latour sets the scene for the reappraisal of the use of ethnographic methodologies, relocating them out of arenas that are considered exotic, to the modern and seemingly mundane. A change of perspective on what ethnography is for has implications on how data is interpreted. *Laboratory Life* (Latour and Woolgar, 1986)

emerges out of the thought that anthropological methodologies should have as much salience in California, as they do in Abidjan (Latour, 2010, 2007, 1993). Latour (2007) explains that it is adherence to the symmetry principle that leads led him to attempt to conduct an anthropological study of science laboratories in California after having completed a study of a workplace in Abidjan (Latour, 2007). He finds that he is not expected to carry over assumptions of anthropology that he had applied as a PhD candidate in Abidjan to California (Latour, 2007 p 14). He goes on to discuss this as an epiphany of 'being blind to oneself' when it comes to Western thought and the belief in its universality, and not the universality of thought from other geographies.

STS's critical stance resonates with other critical perspectives. The thesis is indicative of epistemic diversity as I have engaged the critical approaches that help me think through and develop an explanation for the phenomena that I observe in Nairobi. Concepts used by geographers (e.g. power geometry) are useful for thinking about geographic positionality. This research is also conversant with themes in the anthropology of development and research that has documented the frictions that emerge from the universalisation of discourses on progress like the rhetoric of the knowledge economy (Ferguson, 1994; Mkandawire, 2015; Mosse, 2005; Nugent, 2009; Olivier de Sardan, 2005a; Zeleza, 2006).

The movement between scales in this study means that I deploy theoretical perspectives on structure and agency in parallax. The analytical framework that is most appropriate for African settings and is able to do both, is a coloniality lens. Post-

colonial/decolonial theory tackles relations between a nation and the world, between the state and its people, and between individual and hegemonic modes of culture and enculturation. Post-colonial studies is useful for thinking about the effects of geohistory on contemporary phenomena. For the purposes of this research post-colonial represents both a time period and a geohistorical status. Postcolonial theory connects “the present and the past, the local and the global, the vernacular and the cosmopolitan, the postcolonial and the postmodern” (Venn, 2006, p 1) and attempts to work through the “underlying problem of opening critical spaces for new narratives of becoming and emancipation” (Venn, 2006, p 1).

The field of post-colonial STS is developing because:

> […] issues about relations between sciences and technologies, on the one hand, and colonialism, imperialism, and their recent residues and resurrections, on the other hand, have until recently remained largely unaddressed in science and technology studies, as well as in academic postcolonial studies. (Harding, p24, 2012)

The next step in this evolution of knowledge production is to deimperialise analyses (Ndlovu-Gatsheni, 2018).

2.3 Coloniality and the Knowledge Economy

The fact that we live in a post-colonial global political economy has implications. It means that there is a persistent underlying logics to global interaction—that formerly

colonised nations needed to be brought to the standard of developed countries (Hecht, 2011). This is not an unwritten rule, in fact it is explicit and implicit in discursive environments and in texts. Some ontologies, mostly Euro-American, become taken for granted, and form the basis for how 'modern' society constructs reality (Barnes, 1988; Bourdieu and Eagleton, 1992; Bourdieu and Wacquant, 1999; Dei and Anamuah-Mensah, 2014; Wallerstein, 2004). In the dominant ontological reality there seems to be closure around the meta-narrative of what progress entails, so much so that alternatives are rarely imagined or are viewed as non-modern (Dei and Anamuah-Mensah, 2014; Jasanoff and Kim, 2016; Latour, 2010, 1993). In what Immanuel Wallerstein would refer to as the modern world system, (Wallerstein, 2004, 1995, 1989, 1980, 1974), persistent imperial, capitalistic and unequal relations govern how development and progress are constructed (Bourdieu and Wacquant, 1999; Chen, 2010; Ndlovu-Gatsheni, 2015). The prevailing discourse has 'Africa' trailing at the tail-end of progress and is subject to developmentalism (Dei and Anamuah-Mensah, 2014; Mkandawire, 2015).

If there is a historical encounter whose persistent effects unite much of the world, it is colonialism (Escobar, 1995; Hansen and Stepputat, 2001; Mbembe, 2001a; Ngũgĩ wa Thiongʾo, 1986; Zeleza, 2006). Yet, there is a tendency for studies not specifically dedicated to the study of coloniality to take its evolutions and persistence for granted, a condition that Spivak blames on "sanctioned ignorance" (p 2, 1999). The imbrication of colonialism, imperialism, global capitalism and developmentalism is visible in the discursive systems that have shaped our perspectives on the provenance and definition

of progress (C. Katz, 2004; Mbembe, 2017; Ndlovu-Gatsheni, 2015; Zachry and Thralls, 2007). That coloniality is ignored serves as an explanatory framework for myriad outcomes and trajectories (Bourdieu and Wacquant, 1999; Mudimbe, 1990; Sabaratnam, 2017). Matters taken for granted become doxa (Bourdieu and Eagleton, 1992; Bourdieu and Wacquant, 1999; C. Katz, 2004). The ability to become a universal discourse is illustrative of having power. Latour's (2010) and many STS scholars' answer to "what allows scientific reason to be rational, to become more and more scientific and get closer to universality?" (p 26), is that universality stems from the validity derived from the network of actors that support a form of knowledge.

The previous section has touched on how the knowledge economy has become the ideal that is touted by the development configuration and global capitalist hegemony alike. The knowledge in question is often EuroAmerican technoscience. The determination of what is categorised as fitting the knowledge economy categorisation often determined by colonial modality (Anderson, 2009; Chen, 2010; Fan, 2016a; Latour, 1993; Law, 1991; Law and Lin, 2017; Stengers, 2010; Watson, 2014).The following excerpt from a World Bank website is indicative of the ideas underpinning the knowledge economy concept:

> The knowledge economy is a system of consumption and production that is based on intellectual capital. It typically represents a large component of all economic activity in developed countries. […] Less developed countries tend to have agriculture and manufacturing-based economies. A developing country has manufacturing and service-based economy, and developed countries tend to have service-based economies. Most countries' economies are composed of each of

> these three major categories of economic activity but in differing proportions relative to the wealth of that country. Examples of knowledge economy activities include research, technical support, and consulting. In the Information Age, the global economy has moved toward the knowledge economy, bringing with it the best practices from each country's economy. Also, knowledge-based factors create an interconnected and global economy where sources of knowledge, such as human expertise and trade secrets, are crucial factors in economic growth and are considered important economic resources. (Kenton, 2019)

This excerpt represents the communicative practices that diffuse information on what constitutes knowledge economy. This excerpt reveals the persistent hierarchies in knowledge typologies and know-how. Even though manufacturing and extractive sectors also utilise specialist knowledge, they are apparently not considered knowledge economy sectors. The other message of the piece is that places of low economic development are thought not to have conditions and pre-requisites for the existence of robust knowledge economies (Barbier and Homer-Dixon, 1999). Thus, much of the discourse around progress that is related to these geographies is around ‘catch up’ and ‘inclusion’. It also primes actors not to expect this kind of economic activity in these geographies. The idea that there are knowledges and know-hows that are objectively better than others, is uncontroversial. The idea that only knowledges emerging from a specific geography are useful or modern is much more so (Ascione, 2016a; Grosfoguel, 2007; Harding, 2009; C. Katz, 2004; Latour, 2007; Law and Lin, 2017; Ndlovu-Gatsheni, 2018; Sabaratnam, 2017; Seth, 2016; Suchman, 2011; Watson, 2014).

This hierarchical and preferential perspective on global knowledge is critiqued by scholarship on the coloniality of knowledge (Maldonado-Torres, 2008; W. Mignolo, 2007; W. D. Mignolo, 2007; Ndlovu-Gatsheni, 2018; Quijano, 2007). Maldonado-Torres describes the trajectory of thought in the Latin American modernity/coloniality school, which begins with engagement with the coloniality of power, leads to coloniality of knowledge production, and eventually the coloniality of being:

> If Levinas made the link between ontology and power, Dussel made the connection between Being and the history of colonial enterprises, thus leading to the door of the coloniality of Being. It was, however, as I mentioned before, a different Argentinean (Mignolo), who came up with the concept years later for the first time. The concept of coloniality of being was born in conversations about the implications of the coloniality of power in different areas of society. The idea was that colonial relations of power left profound marked not only in the areas of authority, sexuality, knowledge and the economy, but on the general understanding of being as well. And, while the coloniality of power referred to the interrelation among modern forms of exploitation and domination (power), and the coloniality of knowledge had to do with impact of colonization on the different areas of knowledge production, coloniality of being would make primary reference to the lived experience of colonization and its impact on language (Maldonado-Torres, 2007, p 242).

This trajectory of thought addresses several analytical levels of abstraction—macro level analysis and the micro-level. Grosfuguel (2007) asks:

> How would the world-system look like if we move the locus of enunciation from the European man to an Indigenous women in the Americas, to, say Rigoberta Menchu in Guatemala or to Domitila in Bolivia? I do not pretend to speak for or represent the perspective of these indigenous women. What I attempt to do is to shift the location from which these paradigms are thinking. (p 216)

The fact that authors have examined the effects of coloniality at different scales is useful for this research as it engages with relations at global, national and individual levels. Asymmetry at the global scale can be analysed using Doreen Massey's (1993) concept of power geometry, which discusses the differences between geographies in terms of the ability of people residing within them to mobilise their knowledge, and even be mobile themselves in order to migrate[2]. For last hundred years, power geometry has favoured the West. Thus, whether one foreground colonial modality or not, geohistory is a useful lens for understanding global patterns of knowledge.

2.4 Power and Constrained Agencies

I theorise that actors can exercise agency independent of structural forces, and that hegemony is not total. Yet, I also seek to recognise the entrepreneurs as actants, who are subject to top-down, structural processes. Scholars from a variety of disciplines have grappled with how to indicate that action is regulated, but actors are able to

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[2] Power geometry is a concept developed from a critique of David Harvey's (1989) time-space compression. Time-space compression is a useful concept for explaining the localised effects of capital and information technologies (Harvey, 1989; Massey, 1993). Time-space compression does not affect all actors in the same way. Power geometry considers asymmetries which Marxist thinkers overlook because of their analytical interests (Grosfoguel, 2007).

exercise agency to varying degrees (Abbott, 2005; Amrute, 2019; Bévort and Suddaby, 2016; C. Katz, 2004; Zachry and Thralls, 2007). The terminology that I am using to describe this state-of-affairs is ‘constrained agency’. An actor’s constraints and freedoms can change from one context to the next. According to Herndl and Licona (2009):

> If we define agency as self-conscious action that effects change in the social world, then agency is contingent on a matrix of material and social conditions. It is diffuse and shifting. In contrast to the implied model of agency as an attribute or possession of individuals, agency is a social location and opportunity into and out of which rhetors, even postmodern subjects, move […] We share the sense of purpose that motivates theories of agency, but worry that they produce an inaccurate notion of agency that reifies autonomous agents and obscures the network of material and textual conditions upon which agency depends (p 146).

This perspective on agency that ties it to positionality, allows us to examine it as a relational and also an outcome of a process of attunement. According to Amrute (2019):

> Attunementsdescribe both an orientation among people, technologies and environments, and an opportunity for people to try to create new ‘potential ways of living through things’. […] it proceeds from all the factors that go into creating a particular alertness to a situation. These factors include social relations; affective, political and climatic winds; and the labour that both humans and technical systems do.

This concept of attunement is particularly relevant when we think of the knowledge economy as structured with rules for behaviour and arenas of development as

promissory arenas where enactors are looking to be validated by legitimators like donors and investors. Power, in this case, given the research perspective on the developmental configuration and investors as legitimators, is relational and it is discretion over others' actions (Barnes, 1988) so that they have to become attuned to the preferences of the legitimators.

My interest is to reflect on agency when "hegemony is both consented to and contested" (Mitchell, 2000, p 53). Apart from having different levels of agency, actors also vary in terms of the extent to which they take the status quo for granted. Previous sections have established that not all discourses of progress are universal, nevertheless an effect of the coloniality of knowledge means that they are imposed on developing country geographies. Katz's (2004) 3Rs represent the kinds of agency available to actors who face conditions of constrained agency. She identifies these as Resilience, Reworking and Resistance. Of these, 'reworking' is the concept that is of most mirrors the strategic practices of what I call 'alignment'. Many definitions of agency do not include actors acquiescing to the status quo as a form of agency. There is a tendency to focus on resistance.

> Projects of reworking tend to be driven by explicit recognition of problematic conditions and to offer focused, often pragmatic, responses to them. […] Projects of reworking are enfolded into hegemonic social relations because rather than attempt to undo those relations or call them into question, they attempt to recalibrate power relations and/or redistribute resources. This is not to say that those engaged with politics of reworking accept or support the hegemony of the ruling classes and dominant social groups, but that in undertaking such politics, there interests are not so much in challenging hegemonic power as in attempting

> to undermine its inequities on the very grounds on which they are cast. There are two interconnected aspects to the material social practices of reworking: one is associated with redirecting and in some cases reconstituting available resources, and the other is associated with people's retooling of themselves as political subjects and social actors (p 247).

Katz's 'reworking' reminds me of Odumosu's concept of constitutive appropriation, where constitutive appropriation could be characterised as a kind of reworking. Appropriation has been used by scholars to explain how technologies and sociotechnical imaginaries are syncretised into settings and practices, and made useful. It is a conceptual device that for me evokes the same sense as reworking, that the object that is being appropriated is not apt, and the user needs to modify how they interact with it in order to make it work. Constitutive appropriation seems particularly apt for analysing processes where digital entrepreneurs in Kenya apply technology production principles derived from the experience of Silicon Valley. Constitutive refers to "having the power to establish or give organized existence to something." (Oxford Dictionary, n.d.). It has the sense that the object has been adopted and that the process of appropriation has rendered it even more useful in particular ways. STS scholarship on use cultures demonstrates how users have to be prefigured or apprehended by designers (Campagnolo et al., 2015) for technological uptake to occur (Wyche and Steinfield, 2016). If they are not well apprehended, users sometimes have to make do with or reengineer technologies (Hyysalo and Usenyuk, 2015; Nakata and Weidner, 2012; Von Hippel, 2005; Wyche and Steinfield, 2016). The actors that are the subject of this research are facing a similar scenario, except that instead of an artefact, that

which is being adopted is a technoscientific discourse (Jasanoff and Kim, 2009). Different settings for the application of this discourse have not been prefigured, because it is assumed that the discourse is universal (Jasanoff and Kim, 2016). An assumption that stems from the coloniality of knowledge.

Applying a terminology used for technoscientific artefacts on technoscientific discourse would have been a novel use of the concept. I am also interested, however, in another form of agency not captured by the 3 R's or constitutive appropriation. This is when actors pretend to be aligned, when they cannot be.

> […] what is significant about the adoption of alien objects-as of alien ideas-is not the fact that they are adopted, but the way they are culturally redefined and put to use. (Koptyoff, 1986, p 67)

While these concepts like appropriation creolization (Chen, 2010), syncretisation, indigenisation capture the agency of actors, they do not convey a game playing strategy of fabricating alignment. Shrum's concept of 'reagency' captures this idea better. Reagency is a strategy that is deployed by African scientists in response to encouragement to adopt particular practices from actors who belong to the developmental configuration:

> Reagency refers to processes set in motion when projects originating in areas with high levels of resources are disseminated into areas with fewer resources. It seeks to describe what is occurring not as a simple matter of diffusion, domination, or imitation but as situated action within a dynamic interplay of development initiatives. Our understanding of reagency builds on Emirbayer and Misch's (1998) definition of agency as structurally embedded social engagement

> unfolding within the flow of time, with any given action exhibiting orientation to its past, future, and present components. Emirbayer and Misch's understanding of agency, however, is both un-placed and un-identified because it fails to identify the relational aspect of agency. The individuals, groups, and organizations occupying a given place do not passively accept development projects. They redirect the action using resources stemming from development agencies. In this way, development initiatives of all kinds create a reaction on the part of the actors involved and are thus reagentive. (Miller et al., 2010)

Reagency involves actors appropriating and reworking ideas to suit them, but still managing to convey adherence to prescriptions. This research captures specifically how actors enact agency through narrative, or rhetorical agency (Jones, 2017). Why they enact this agency is the crux of this study, therefore, I conclude that *constrained agency* is the terminology and framework that allows one to analyse the 'why'. Each empirical chapter will reveal a set of different actor groups in different contexts and how they assert constrained agencies.

3 AFRICA AS METHOD

This research operationalises a methodology that centres the arena of action in Nairobi. I am interested in the methodological use of geography as a historical and analytical category, which is already standard practice in area studies, geography and post-colonial studies. Within STS, the Chen's (2010) *Asia as Method* serves as inspiration. Chen (2010)'s goal is to "multiply frames of reference in our subjectivity and worldview" while acknowledging the West as constitutive of Asian subjectivity (p. 223).

> […] it has always been implicitly acknowledged that in the field of social sciences and the humanities, there is no better laboratory than Africa to gauge the limits of our epistemological imagination or to pose questions about how we know what we know and what that knowledge is grounded upon; how to draw on multiple models of time so as to avoid one-way causal models; how to open a space for broader comparative undertakings; and how to account for the multiplicity of the pathways and trajectories of change. (Shipley, 2010, p 653)

It is important to understand that whatever epistemological opportunities exist, emerge from the shortcomings of previous methodological approaches rather than some inherent idiosyncrasy or magic of Africa. Avgerou (2002), while seeking to undermine the 'technoeconomic rationality of western modernity', makes a case for the value of studying "atypical" and "problematic" contexts in order to challenge existing orders, and to connect 'local action—or inaction—to its broader context' (p 5). The goal is to shift perspective so that 'Africa' becomes vantage point through which we know what is atypical and problematic.

The heterogeneity of African trajectories cannot be overstated, and this research speaks to the particular experience of one arena of development, in one city. The contention of post-colonial studies, however, is that geographies that have a shared history of encounter with European domination and its civilising, scientific rationales, reproduce similar sets of actors and dilemmas when it comes to their contemporary interaction with the global political economy (Anderson, 2002; Chen, 2010; Fanon, 1961; Hecht, 2011; Ndlovu-Gatsheni, 2018).

In order to operationalise Africa as Method, I gathered historical, documentary evidence and academic analyses that reveal the rationales that determine the trajectory of ICTs in Kenya. I conducted participant observation at two firms that represent the presumed dualism of approaches to digital entrepreneurship—for profit versus for development. A dualism which upon further analysis appears to be artificial due the similarity of their underlying imperative, which is to modernise. The ethnographic data is complemented by semi-structured interviews of various actors who identify as participating in Silicon Savannah. Other sources of data include participant observation at spaces that are representative of the development arena. Web-based documents, including weblogs, email archives and social media commentary are also sources of evidence.

The position of this research is that socio-technical spaces around the world can all be studied as sites where a variety of interactions take place—knowledge generation, knowledge exchange, knowledge transfer, and colonial relationality and its

imbrication with global capitalism (Tsing, 2005; Fan, 2016). All of these processes are present to greater and lesser degrees, in all places. Appiah (1991) argues that structure and agency are neither contradictions nor complements. Rather, they represent different explanatory rationales. "We should see the relations between structural explanation and the logic of the subject not as a competition for causal space but for narrative space: as different levels of theory…" (Appiah, 1991, p 74). Trulsson (1997) who has undertaken actor-centred entrepreneurial research in Tanzania came to the same conclusion that I did that understanding entrepreneurs' practices will be accomplished by "complementing macro-level theories with empirical evidence of micro-level processes." (p 3). Hence, an analysis of the relationship between the macro and micro, and its asymmetries are embedded into the discussion.

For guidance on how to proceed, I turned to scholarship on the biography on artefacts and practices (BoAP). BoAP resonates with my approach because it calls for making strategic choices rather than counting on a purely inductive process or grounded theory (Pollock and Williams, 2013). Thus, focussing the open-ended questions as the research proceeds. It is also important not to generate heroic narratives about actors or groups of actors, rather, to characterise outcomes as self-fulfilling prophecies that reflect the visions of the powerful actors in the area (Pollock and Williams, 2016), but it also does not succumb to overdetermination and understands that outcomes are subject to contingency (Stewart and Williams, 2002; Tsing, 2005).

The sections that follow delineate the methodological considerations and describe the methods of data collection and data analysis.

3.1 Identifying Research Objectives

Ethnography can appear to overlap with grounded research, but given that I entered the field with specific interests, it is more accurate to describe this research from as proceeding from "open-ended questions" (Bryman 2008, p 418). Prior to this study, I had conducted desk-based research on Silicon Savannah that included a mapping of typologies of actors. An open-ended approach translates into remaining open to where the data will lead and not pre-determine the relevance of particular information and data themes. I was interested in how actors constructed the arena of development and in tracing moments of contingency that had significant effects on its trajectory.

1 *How did Silicon Savannah come to be?*

Silicon Savannah represents the transmission and adoption of particular modes of culture (often conceived of as knowledge). The thesis emerges from empirical data that aims to produce evidence of this transfer and then develops an explanation of the process and its effects. Postcolonial STS scholars have engaged with the approaches of cultural sociology in order to produce these analyses (Ascione, 2016a; Ascione and Chambers, 2016; Fan, 2016a). Lizardo (2017) for instance, provides a useful framework for designing methods that capture the declarative and non-declarative elements of public culture. This research's focus on discourse and narratives is a result

of the difficulty in representing non-declarative elements of culture as data (Lizardo, 2017).

> […] under the most influential approaches, the implicit, or nondeclarative aspects of culture (phenomenologically opaque and not open to linguistic articulation) are usually conceptualized as being inherently intertwined with, or as being of secondary analytic importance in relation to, its explicit or declarative facets (phenomenologically transparent and elicited as linguistic reports). That is, knowledge "how" is not properly differentiated from knowledge "that" (Ryle 2002:25–26). In the modal case, linguistically articulated forms of culture are presumed to be of more inherent substantive interest than "how" knowledge, or at least of being capable of serving as a relatively unproblematic point of access to the latter (Jerolmack and Khan 2014).

I would argue that the difficulty in demonstrating the non-declarative 'how' is located in wariness about reliability and validity. The solution for me was to look for declarative evidence that connects historical context to the present in order to draw conclusions about how things happened.

> "Biographies of things can make salient what might otherwise remain obscure. For example, in situations of cultural contact, they can show what anthropologists have so often stressed: that what is significant about the adoption of alien objects—as of alien ideas—is not the fact that they are adopted, but the way they are culturally redefined and put to use" (Koptyoff, 1986, p 67).

A biographical analysis naturally emerges out of an interest in Silicon Savannah's origins. Additionally, Rinaldo and Guhin (forthcoming) propose that interviews that are embedded in ethnography are able to capture declarative and non-declarative data. The narrative that emerges speaks to a history of intervention and prescription. An

analysis of Kenya's political economy and the intervention by global actors emerged out of contemplating Nairobi's geohistorical positionality. The Silicon Savannah arena of development is located in the cosmopolitan, capital city of Kenya. It is a post-colonial place. An analysis that fails to background or foreground this context, will have gaps (Ascione and Chambers, 2016; Bourdieu and Wacquant, 1999; Suchman, 2011; Suchman and Bishop, 2000).

2 *What/who is Silicon Savannah?*

Rather than setting a boundary around who is in and who was out, the goal in asking this question is to understand who identifies with the arena and why—and the kind of discourses and imaginaries that are included in this self-perception. The imperatives of decolonial research (and Africa as Method) is that it is designed to capture the subject's position and to engage with actors as trustworthy rapporteurs of their own experience (Chen, 2010; Lentin, 2019). In some aspects Silicon Savannah operates as a metaphor—it is symbolic of the globalisation and enculturation of a particular form of digital livelihood making and finance capitalism.

My perspective is that there are alternative digital economies and Silicon Savannah represents one of them. This perspective is supported by the fact that there were digital entrepreneurs that did not count themselves as part of Silicon Savannah. These persons expressed that they did not see themselves as participants in the Silicon Savannah that was visible in the media. It was important, then, that the actors who were research participants self-identified as in or out.

3 *Why Stories: Explaining Silicon Savannah*

This research is about what the experiences and practices of Silicon Savannah actors can tell us about the discourse of innovation and entrepreneurship and its effects. This translates into collecting information on aspirations and visions of success, inspirations, what steps actors were taking to achieve them, and how they knew what to do. As discussed in Question 1, the crux of the research lies in theorising the relationship between dreams, discourse and practice. Critical discourse analysis provides a way forward. Innovation and entrepreneurship can be interpreted as a discourse in the Foucauldian sense—a rhetoric and practice that is communicated, attested to and enacted (Bryman, 2008; Diaz-Bone et al., 2008; Souto-Manning, 2014). It is important to clarify that discourse here is not simply a linguistic category. Souto-Manning (2014) relies on Foucault, Gee and Rymes to develop the following definition:

> It is thus an inherent and inseparable part of the social world, of the broader social context. It shapes and is shaped by society. Beyond verbal and written language, discourse encompasses ways of being in the world including semiotic acts other than linguistic symbols. Along with words, discourse encompasses values, beliefs, moral orientations, social identities, and attitudes (p 159).

Analysing discourse using Critical discourse analysis (CDA) elicits an analysis of performativity and power (Alvesson and Karreman, 2011; Diaz-Bone et al., 2008). My interest in discourse also emerges from entrepreneurial narratives and how they represent an attestation of adherence to a meta-narrative. Critical Discourse Analysis

(CDA) bridges an analytical gap between digital entrepreneurship as a model and its enactment, but using it means that the researcher has to demonstrate these intangible connections (Greckhamer and Cilesiz, 2014). This becomes a determinant in the methodological decision-making.

Demonstrating these intangibles is supported by a biographical approach that narrates how discourses inspire actors' strategies (see sections 3.3). In addition, Deuten and Rip (2000) have illustrated that one can create bridges with their concept of narrative infrastructure. Narrative infrastructure is as important as any other kind of infrastructure in a system of production. Deuten and Rip's concept of narrative infrastructure is rooted in the scholarship around assemblages, they provide that narratives are part of part of the socio-technical 'agencement' that is involved in the product creation process (p 71, 2000). It connects micro-level actors' declarations about their processes to an arch-narrative. Through their observations of these product-creating actors Deuten and Rip show that the connections between saying and doing are tenuous. This research makes similar observations of various actors' pronouncements. Actors create narrative infrastructures that do not necessarily match their practices, the reasons why are the crux of this research.

3.2 Methods and Methodological Considerations

Ethnographic research typically combines participant observation with interviews and analysis of documents (Bryman, 2008; O'Mahoney, 2014; Rinaldo and Guhin, Forthcoming) and increasingly includes data gathered from internet sources

(Caliandro, 2018; Herring, 2010; Hine, 2015). Ethnographic research is a contemporary investigation of social realities that forces us to confront the complexities of society as people live it. It involves describing people(s) and understanding them in fullest possible context in order to make sense of surroundings and everyday actions (Besbris and Khan, 2017; Cottom, 2019).

This dissertation represents research across scales, where the data gathering methods needed to capture global, macro-, meso-, and micro-level information. I have reproduced Lizardo's (2017) diagram of his conceptualisation of how culture is performed or revealed. Lizardo's aims to outline the difference between scales and the kinds of information needed to understand them.

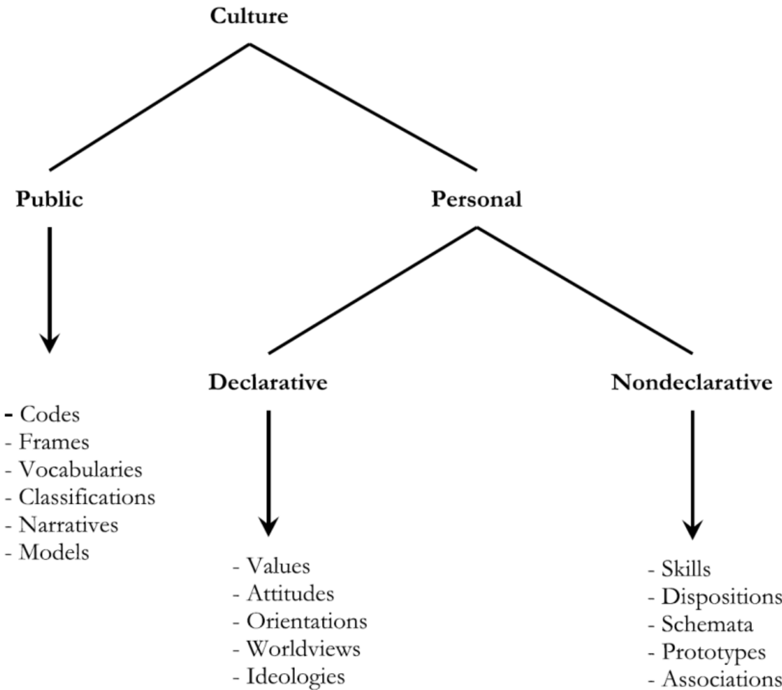

Figure 2: Lizardo's diagram that illustrates the difference between how one culture is represented by actors in the macro/meso scales and the micro scales

The research is designed to understand the culture of innovation and entrepreneurship. The amendment that I would make to Lizardo's (2017) diagram is to replace 'narratives' with the word 'discourses' and include it in the 'declarative' column. This is primarily two demonstrate where I am locating these terminologies in this paper. The research also includes a historicising element that aims to collect the same information about the public sphere in the past.

Data organisation is guided by the rules of thematic analysis (Blaikie, 1993; Bryman, 2008; Herring, 2010; Nowell et al., 2017), critical discourse analysis (Bryman, 2008; Diaz-Bone et al., 2008; Greckhamer and Cilesiz, 2014; Wickham and Kendall, 2008) and narrative analysis (Abbott, 2008; Deuten and Rip, 2000; Roundy, 2016). Thematic analysis is an approach that is used by many researchers but is rarely recognised as part of the process (Nowell et al., 2017). Critical discourse analysis connects to the macro and meta-level discourse and narrative analysis, to the meso-level personal narratives.

Ethnography

An imperative of this research is that we pay attention to actors' given rationales for action (Deuten and Rip, 2000) as a product of historical and geographical positionality (Chen, 2010; Ndlovu-Gatsheni, 2018). As this research aims to study broader

dynamics from the perspective of actors in Kenya's arena of ICT development, ethnography is an ideal methodology. The biography of artefacts and practices (BoAP) advocates for strategic ethnographies which are "theoretically-informed, multi-sited, and longitudinal studies" (Pollock and Williams, 2013). Rather than reduce action to simplified rationales it aims to reveal complexity while highlighting particular themes that pique the researcher's interest (Pollock and Williams, 2009, p 6). Haines (2017) argues for a multi-dimensional ethnography that is able to follow its subject into ephemeral and digital spaces.

Caliandro (2018) quotes Marcus in his definition of multi-sited ethnography which helpfully connects with the research's interest in the idea of world systems:

> Multisited ethnography is a fully fledged ethnography of contemporaneity, dealing with global fluxes of mobility and communication, which George Marcus defines as "a mode of ethnographic research self-consciously embedded in the world system, . . . , moves out from the single sites and local situation of conventional ethnographic research design to examine the circulation of cultural meanings, objects, and identities in diffuse time-space" (1995, 96). (p 555)

This research not only operates at different scales (at the macro-level we have the national context, and beyond that we have a global context) but as Lizardo (2017) indicates understanding public culture requires taking into account various modes of conveying information—speech acts, performance and affect. The non-declarative elements are tackled by observation, while declarative by interviews.

Even though, interest in the origin of the arena makes it important to think through epistemologies of diachronic research, it is important not to characterise this research as a case study. One, criticism of case studies is that their narrow focus neglects broader dynamics and their effects (Bryman, 2008; Fan, 2016a; Kopytoff, 1986; Pollock and Williams, 2009; Thrift, 2005; Yin, 1994). Additionally, there is an issue with the epistemological claims that case studies make. The goal of this research is to critique social processes, not to generate data that is representative of a population. Therefore, while I am studying a case (which requires a historical lens) (Widdersheim, 2018), I am not extrapolating those findings to a population (Widdersheim, 2018).

Explanatory research (Blaikie, 1993) and case study research (Widdersheim, 2018; Yin, 1994) have an embedded temporal analysis, therefore it was somewhat surprising to realise that there was a history of ambivalence in the social sciences and humanities towards combining historical and sociological methods in research (Abbott, 1991; Widdersheim, 2018). For guidance on how to proceed with an ethnography that was also a biography, I turned to scholarship on the biography on artefacts and practices (BoAP). BoAP warns about the limitations of 'situated' research (Harris, 1998 in Pollock et al., 2009, p 257). An emphasis on 'situatedness' does not consider the effects from multiple sites and temporalities (Pollock and Williams, 2013, 2009). The limitations of BoAP are felt when it comes to setting boundaries; the goal is to generate a holistic picture but in order for the study to come to an end, there needs to be a logical boundary. The temporal boundary was my departure from the field, and the other was the year of the liberalisation of the telecommunications sector.

Thus, the primary research method is ethnography, supplemented by approaches that produce a historical context. In which case the research is best described as a historicised ethnography (Naepels, 2010; van Meijl, 1996). Ethnographic methods are designed to triangulate data collection—the participant observation technique is supplemented by formal and informal interviews, documentary analysis and internet-mediated sources (Brewer, 2000; Caliandro, 2018; Hine, 2000; Rinaldo and Guhin, Forthcoming). I embedded within firms in Silicon Savannah, in order to view Silicon Savannah from their perspective. I kept a field dairy in which I made daily entries and recorded preliminary analyses. I organised data into themes in an Excel file, where each sheet represented a theme and contained various data items (interview excerpts, tweets, email excerpts, references to field notes) related to the theme (Nowell et al., 2017).

Virtual and Digital Ethnography

The arena is inherently a digital and digitised field site—a product of the time space compression produced by interest in the development and use of digital technologies (Harvey, 1989). Even this were not an analysis of the digital economy, according to Hallet and Barber (2014) "it is no longer imaginable to conduct ethnography without considering online spaces" (p 307). The dichotomy between online and offline is now considered passé, with digital observations considered part of broader ethnographic work (Airoldi, 2018; Caliandro, 2018; Carroll et al., 2010; Haines, 2017; Hsu, 2014).

The internet-mediated aspect of the research is a component of the ethnography (Caliandro, 2018; Hine, 2015).

The research is, however, not about the internet. This is an important distinction to make between research that is interested in how the internet mediates discussion and using the internet as a tool for data collection (Caliandro, 2018; Carroll et al., 2010; Haines, 2017; Hine, 2015, 2000; Sparks et al., 2016). Ethnographers of the internet make a distinction between virtual ethnography which applies 'offline' tools to collect data from the internet and digital ethnography which "take the nature and affordances of the digital environment seriously, as their main purpose is to follow how digital devices such as search engines and social media platforms, and functions such as Twitter's hashtags and retweets, structure the flows of communication and interaction on the Internet" (Caliandro, 2018, p 558). I inhabited an in-between space, in that I was applying tools that I was using in offline spaces (observation, thematic analysis) to the online space. Nevertheless, I was interested in the digital space and what it offered to users in terms of an ability to develop relationships across geography, vent complaints online while remaining silent in the room, and enculturate.

The process of analysis followed the rationales of what Herring (2010) terms computer-mediated discourse analysis, which innovates away from traditional content analysis.

> CMDA has been applied to the analysis of email, discussion forums, chat rooms, and text messaging, all of which are forms of dialogue (or polylogue). It can also be applied to mediated speech (since discourse analysis is originally a spoken

> language paradigm), as well as to monologue text on web pages (Kutz & Herring, 2005). Finally, it can offer insight into the hypertextual nature of websites, through discourse methods associated with the analysis of intertextuality, or content that refers to content in other texts (Mitra, 1999) (p 238) .

Digital technologies provide tools for data collection and are also sites for data collection (Sparks et al., 2016). In the case of this study, I did not study the interactions of individuals on the web, rather I included the web as part of a location in which I could obtain their utterances, in a different context from an interview.

Social media

Airoldi (2018) disaggregates the social media field site into transient and fixed spaces. Transient spaces for example are exemplified by Twitter, which itself can be further subdivided into more fixed and ephemeral modes. The use of a hashtag to identify sentiments related to a topic, or trending conversations (Caliandro, 2018) is much more fixed than tweets that are not related to a particular event or topic. Fixed spaces are message boards, discussion forums and Whatsapp groups. Ethnographies of fixed spaces are easily designed but those of transient spaces are much more difficult to develop digital methodologies for (Airoldi, 2018).

Social media, namely Whatsapp and Twitter feeds were useful for collecting real-time commentary. Trending topics on Twitter were a good way of following sentiments on a topic as it unfolded. I created a Twitter account, in order to observe the discourse that was taking place. I followed 109 individuals who identified with Silicon Savannah. If there was a topic trending, I would collect tweets that:

- referenced key actors and their roles
- talked about events of note
- revealed mechanisms and processes that yield outcomes that seem to have meaning for the actors

When topics were not trending, I collected tweets that reflected themes that had come up in interviews or resonated with data collected in other ways. It was particularly useful tool for viewing dissenting positions. One on one interviews generally produced one person's perspective on a subject, but Twitter typically revealed almost every possible take on a matter. Twitter was a good place to understand the contestations that currently exist as twitter camps would coalesce around a particular argument, re-tweeting sentiments that they agreed with and addressing those that they took issue with. The Silicon Savannah Twitter community were also a good source of links to virtual grey literature like media articles and reports.

Data collection in the case of Twitter consisted of retweeting the tweets so that they remained on my timeline. Every so often I would use an application that converted these tweets into a .csv file. Through this process, I collected 1,333 tweets. I would then include these tweets in the Excel sheet in which quotes, and blog excerpts were organised thematically (Jones, 2017; Nowell et al., 2017). Ahmed et al. (2019) use a similar thematic approach to organising Twitter data in a study of views towards 'swine flu' during the 2009 pandemic. A main difference between their study mine is that my themes have been developed by other means of data collection, therefore the

tweets are supplemental to other evidence. The studies are most similar when I collect Tweets that related to an event (Ahmed et al., 2019).

Weblogs

I identified weblogs early on as sources of information about the nascent innovation ecosystem. Interest in the subjective interpretive frameworks of the actors was mitigated by a caution on self-reported data. Carroll et al. (2010) note the rare use of blogs in research (p 151). For Carroll et al. (2010) they are a useful method for capturing real-time data. It is this quality that makes useful for historical analysis.

> A blog is a form of website that is typically used as a personal diary or log, with entries and postings made primarily by the author of the blog. The appeal of the blog is said to be due to the creation of a space where people can "express their opinions and views on different topics without fear of censorship" (Bachnik, Szymczyk, Leszcznks, & Podaidlo, 2005, p. 3179) and have been found to "generate a sense of community" amongst people with shared interests (p 155).

The ability of blogs to create community is evidenced by the Kenya Blog Webring which I locate as an initial site for the development of relationships that are embodied in Silicon Savannah. One can observe these interactions as the happen in the comments or as interlocutors share one another's posts or indicate that they have had conversations or met in person (Herring, 2010; Willson, 2010).

Blogs are also a good means not for reviewing actors' experiences and thoughts, and a means of capturing changes in attitude, behaviour and expectations before they were reworked to fit the narrative generated by hindsight. For instance, I observed that many

blogs followed a pattern where they initially read like personal diaries and later became professional, stylised websites. It reflected a growth in audience and a change in the profile of the author as Silicon Savannah actors, and the arena itself, grew in visibility. The bloggers generally altered the tenor and content when it became obvious to them that they had high viewership. Some of the bloggers are now considered to be Kenya ICT gurus and that is reflected in the tone of their entries, which are oriented towards giving advice, presenting opinions and maintaining a particular persona. I intended to capture the perspectives of the 'usual suspects' through a textual analysis of their blogs and social media interactions, which went back to a time when they were not yet in the public eye, and could be treated as public diary entries. Because this research cohort consisted of internet savvy actors, I also wanted to use digital ethnography to observe their interactions on social media. I reflect on how actors are engaged in performances of the digital entrepreneur imaginary. The changes in actors' blogs captures the trajectory of these enactments, and how they change particularly as actors become aware of an external gaze. Blog entries serve as diary entries that are useful for acquiring information about the origins of a regime (Hookway, 2008). The early perusal of these information sources also helped me develop the list of interview subjects and themes.

Email Archives

The opportunities represented by emails are similar to those of weblogs (Carroll et al., 2010; Herring, 2010). Not only to they have information about real time events, they

also produce information about sociality (Willson, 2010). A source of actor-generated, historical data were the email communications of KICTANet—the Kenya ICT Action Network. I also had access to the emails of Skunkworks, a collective of professional technologists working in Nairobi. They were primarily computer and IT professionals located in the private sector in Nairobi. Given the data surplus, and the fact that the themes emerging from Skunkworks emails around transitioning into digital entrepreneurship were emerging in the blogs, and the fact that KICTANet provided insight into the contestations between actors who belonged to different professional ecologies, I made the conscious choice to focus on KICTANet's email archive. KICTANet's emails provided a view into the differences in the discourse on innovation and entrepreneurship, which was in danger of being characterised as homogenous.

KICTANet was an early advocate for the development of ICT infrastructure in Kenya. Their emails were very useful in revealing historical but real-time processes and sentiments as ICT infrastructure was rolled out in Nairobi. They also reveal the political economic and individual motivations behind advocacy for ICTs; including who the key players were and the power dynamics at play. I read all KICTANET email chains between 2005 -2008 and archived those that were relevant to the question of Silicon Savannah's origins. As in the case of the interviews, I determined which email chains were relevant to this research based on the thematic areas emerging out of preceding research. A discussion of the procedure of thematic analysis is in the section that follows.

Participant Observation

Ethnography and participant observation are often used synonymously. It is helpful, however, to distinguish participant observation as one of the methods of ethnography. Participant observation is rooted to the present, to generate a perspective on the past, one needs other methods. In order to observe the arena, I needed to be embedded in its sociomaterial environments (Katila et al., 2017). After noting that from the perspective of local actors that there were two distinct discourses and networks of actors that had formed around two strains of discourse: ICT4D and ICT4$, I organised five-month long work placements in two organisations that were representative of the two discourses. I thought of these as sites that were illustrative of how different ecologies of practice interpret the imperatives of digital technological solutionism and wanted to be able to compare their practices and contexts. From my perspective, the imperatives were derived from the same impetus to include non-modern places into modernity.

The for-profit firm, Pronto[3] is a co-founded by three young Kenyan men in their thirties. Pronto's offices are located on Ng'ong Road, on the third floor of a commercial building. A few hundred metres down the road is unofficial Silicon Savannah headquarters, the Bishop Magua Centre which houses iHub, Nailab, mLab

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[3] The names of companies have been changed to provide anonymity.

and Gearbox—spaces where digital entrepreneurs can congregate and obtain a variety of resources. Thus location on Ng'ong Road was particularly convenient for a researcher conducting an ethnography of Silicon Savannah. The firm acts as a mobile services application consultancy, developing custom software applications mainly for retailers. It also represents itself as a start-up due to their design and development of business-to-business (B2B) application that was on the market. The founders of Pronto[4] are also partners in this venture, which is an inventory management software system. In the past, Pronto were also co-owners of a digital platform that connected motorcycle delivery men to customers through an app. One of the founders, the technologist, had bought out the other two out of this last venture, HailApp. My presence at Pronto allowed me to observe not just one, but two firms that aspired to the same kind of success but were experiencing different trajectories.

With respect to digital technologies for development, an interview I conducted with the founder of LightUp in his capacity as a Silicon Savannah investor led me to be interested in LightUp. It is not an ICT start-up. It sells solar lamps on a hire purchase model. LighUp's direct competitor, M-Kopa, however, sells the same product but identified as a digital enterprise because they collected payments through mobile

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[4] Names of the firms that I interacted with directly have been changed for confidentiality.

phones. Presence at LightUp allowed me to analyse the identity formations around digital entrepreneurship and the benefits that might arise from connecting one's entrepreneurial narrative to the narrative infrastructure of digital entrepreneurship versus social entrepreneurship. The analysis draws implicit and direct comparisons with M-Kopa using M-Kopa's public declarations about their activities and their reputation in the arena. The fact that LightUp's founder is a white, immigrant, an investor in the arena, and an advisor to other funds enabled additional levels of analysis. The racial identity of a firm's founder became a flashpoint in Silicon Savannah during the fieldwork period. The discussion around representations of knowledge and expertise that were stimulated by certain events were an important impetus for my engagement with the literature in the coloniliaty of knowledge.

Both organisations provided me with access in exchange for market research. Undertaking this task was a good way to acquire first-hand knowledge of their practices and customers. I conducted myself as an employee, arriving and departing at set hours. At Pronto my absence was preferred, as it indicated that I was away conducting the market research. Despite working as staff, this research is not an example of action research (Tasker et al., 2010) as I did not intend or expect that the findings of the PhD research itself would be used at the research site (Bryman, 2008; Tasker et al., 2010). Furthermore, the study is of Silicon Savannah, thus, the findings are about the experiences of entrepreneurs in Silicon Savannah, rather than about these firms organisational practices. Therefore, materials that I produced as part of the market research are not data artefacts and sources for this research. However, the

information derived from market surveys of Pronto's 64 and LightUp's 102 customers is interpreted qualitatively and in aggregate as part of the participant observation of the firms, and the ethnography of the arena, more generally.

The participant observation process is sometimes interactive, and other times consists of more observation than participation. "In reality, most ethnographic research falls somewhere along a continuum – at one end of which can be placed pure observation, and at the other, complete participatory immersion – and is invariably augmented with data from unstructured interviews or directed conversations steered by the researcher to his or her own interest areas."(O'Mahoney, 2014). For instance, during a public meeting of gatekeepers and powerholders in the Silicon Savannah community that had been convened to resolve a business dispute between an investor and company founders, I was a quiet observer. This meeting was significant because it highlighted how expectations of transparency and kinship had developed within Silicon Savannah and how this idea of fellowship distinguished this development arena from typical imaginaries of individual, independent entrepreneurs beholden only to profit-margins. Nevertheless, despite the public setting and the ethos of shared accountability there were intangible rules about who could speak and who remained silent. In contrast, while at Light Up, I took a week-long trip to recruit customers and a new staff member. This represented a new site as well as a new kinds of data collection that involved much more participation. For instance, accompanying us on this trip were representatives from other technology start-ups and social enterprises. The conversations that I kindled about their experiences had the features of a focus group

or a group interview where individuals respond to one another's assertions and experiences. These interactions, however, were not designed as focus groups, so I considered the as part of the participant observation process and recorded these conversations in my field notes. I asked the group if they would be willing to participate in the interviews but they were reticent about being as candid on record. In hindsight, focus groups might have been a good way of gathering data on contested discourses and practices. Experience with Pronto and LightUp was invaluable for producing empirical insights about the differences in approaches that stem from the appropriation of different discourses and their practices. It yielded insight into the varieties of sense making and translation activity occurring in firms within Silicon Savannah, while also highlighting the underlying consonance of their world view.

In many ways Silicon Savannah is a comparative analysis. Actors within it are continuously measuring their success against a notional idea of success that emerges from prevailing ideas in popular management and economics, rooted in modernity. The other source of ethnographic data was participant observation at venues that embodies this comparative element in the arena, like pitching competitions or seminars that transmitted best practices in digital entrepreneurship. These events and social gatherings are listed below:

- The Entrepreneurship Seminar hosted at the iHub on the third Saturday of every month. It was led by Dr. Bitange Ndemo, the former Permanent Secretary at the Ministry of ICT, who often had guest lecturers. Dr. Ndemo is

a professor of industrial economics at the University of Nairobi. This class demonstrated how the experiences of arenas such as Silicon Valley, Bangalore’s outsourcing industry, and Israel’s technology innovation system were converted into curricula and used as exemplars of a singular logics. The class was free and open to the public.

- The Connected Kenya conference that took place between 30 March and 2 April 2016. It took place shortly after I arrived for fieldwork. Entry was free and open to the public, but one was required to have registered in advance, which I had.
- Livefeed of the Global Entrepreneurship Forum hosted by President Obama and President Kenyatta at the iHub in July of 2015.
- Innovation Week hosted by the University of Nairobi in August of 2016. I had, by that time, become familiar to a number of actors and was invited to the ‘behind-the-scenes’ areas where speakers, sponsors and presenters were gathered.
- A pitching competition hosted by American Society of Mechanical Engineers (ASME), had competitors arriving from the entire region and winners received up to $50,000. As with the large number of events in this arena these events were open to the public.
- Aside from these official events, I also attended social mixers and public seminars. These were often hosted at incubators and co-working spaces.

- A 'townhall' meeting hosted by iHub to discuss a dispute between investors and founders at a start-up, Angani, on 25th November, 2015 is a key resource for this research. It has informed the analysis because it epitomised the moral economies, social indexing, and power dynamics of the arena.

All of these were ideal spaces in which to conduct the mix of data collection practices described by O'Mahoney. Aside from observing how actors behaved, I also had extemporaneous conversations that were not mechanically recorded. I often noted these in the field dairy and arranged subsequent formal interviews. Katila et al. (2017) conducted an entire course of research simply by attending an international pitching competition, Slush, where they observed performative aspects of the enactment of digital entrepreneurship and observed social learning and the transmission of norms and to experience social dynamics. In *How Industry Analysts Shape the Digital Future*, Pollock and Williams (2016) demonstrate the importance of conferences for transmitting expectations and creating infrastructures of legitimation. While the agenda of structuring an ecology of knowledge is not as overt at pitching competitions, attendees are receiving information about how to present themselves and their artefacts.

Formal Interviews

In a forthcoming paper, *How and Why Interviews Work: Ethnographic Interviews and Meso-level Public Culture,* Ricardo and Guhin complement Lizardo's (2017) disaggregation of the concept of 'public culture' with the addition of a meso-level, and

discuss how interviews conducted in the context of an ethnography are able to collect data at this level of abstraction. The meso-level in this study is the level at which the arena of development (Silicon Savannah) operates.

> [..] we suggest that ethnographic interviews are useful for two reasons. First they help scholars gain access to the intersection and interaction of all three modes Lizardo suggests: declarative, nondeclarative, and public, helping to push against an over simplistic binary of saying versus doing (Decoteau 2016). Second, they help us understand how public culture itself is divided into a macro and a meso level, with ethnographic interviews uniquely situated to give access to how that meso-level public culture interacts with the other cultural modes (Rinaldo and Guhin, Forthcoming).

Aside from informal interviews that took place as a result of being embedded in the arena. I also conducted formal interviews. The sampling strategy in ethnographic research is usually purposive, specifically snowball sampling (Bryman, 2008, p 414) as it is generally ‘difficult and often impossible to map the population from which a random sample might be taken” (Bryman, 2008, p414). Representation is not an objective of ethnographic research, therefore I did not have to reckon with the philosophical (Derrida, 2000) or statistical questions about who or what sample size qualifies as a representative (Bryman, 2008). I also used purposive sampling to target actors who could provide insider knowledge and clarify and validate observations (Bryman, 2008). It is an approach that has the twin benefits of resolving the issue of determining who is an insider or outsider by allowing actors to identity one another as belonging. Through, snowball sampling I could be sure that I had interviewed actors who were part of the network. Over the course of the year I spoke to start-up

entrepreneurs, their customers, the managers of incubators, financiers, policy makers and other actors affiliated with the arena.

I, however, did makes a deliberate choice not to seek out frequently interviewed entrepreneurs. There are, actors who are highly visible and closely associated with Silicon Savannah and its institutions (I took to referring to members of this cohort in my notes as ‘the usual suspects’) who I decided not to include. I connected visibility with power or at least cachet and influence. These individuals have given TED talks, been profiled numerous times in local and international media, are sought after guests on panels and seminars, and have a sizeable social media following. Given their over-identification with the arena, I only interacted with them through their online content (see section on Digital Ethnography). I took their blogs and social media to be representative of the discourse on which Silicon Savannah was based. Instead, I focussed on less visible actors for interviews. Distinguishing between highly visible discourse generators and those who were not, was the only real boundary that I imposed with respect to interview subjects. It is significant decisions such as these that were made prior to fieldwork that mean that research is not grounded research.

I would ask interviewees to suggest the location for the interview—the primary location was offices spaces, followed by cafes. Interviews were recorded on a digital camera with its lens cap on. At some point, I had considered using video ethnography. I had been employed as research assistant on a different project that had used video ethnography as a data collection method. However, I observed during that project that

the introduction of a camera altered the interaction. They developed a journalistic and practiced feel. The microphone attached to the camera was powerful enough to capture interviews undertaken even in noisy café settings. The interviews were saved onto the camera's SD card.

This research uses a narrative analysis approach (Section 3.3) which requires that asking interviewee question elicited biographies and histories. Narrative approaches are particularly useful when the research is interested in "the tellers' identity constructions" (Larsson & Sjobolm, 2009, p 274). Jones (2017) similarly conducts interviews with entrepreneurs using a narrative inquiry approach and thematic analysis to explain how race structures entrepreneurship. I was interested in how actors understood digital entrepreneurship identity and that of the arena. In the interview setting asking entrepreneurs about their start in business generated a narrative that would include their own experience and motivations, and their experience in relation to the trajectory of Silicon Savannah. Also, "Narrative analysis allows the researcher to make systematic studies of personal experiences and to analyse how important events have been constructed by the subject" (Larsson and Sjobolm, 2009, p 276). Responses yielded the focus on the historical analysis of particular events (Deuten and Rip, 2000). The interviews were conducted in English, in some instances we spoke in colloquial Kenyan English, slang and Sheng—a pidgin of English and Swahili.

The semi-structured interviews generated discussion around a wide variety of topics. The early interviews had an impact on the trajectory of the research and the interviews

became more structured as subsequent interviews sought out new respondent's views on the themes that arose out of previous interviews. I kept field notes regarding my impression of the interviews to supplement the recordings. These were primarily to remind me of my initial impressions, when I revisited the transcripts.

I manually transcribed each interview. I listened to the audio, and typed a transcript of the conservations in the interviews into Microsoft Word documents. I created a 'Research Themes' Excel document in which I saved interview excerpts on particular topics. Each theme represented a sheet in the file. I saved excerpts in the first column; the next column identified the interview subject and the date of the interview. The frequency of a response i.e. how many people raised a particular topic, was an important analytical attribute but the most important attribute of an interview was the content and insight that it produced about the entrepreneur's experience. This reiterates the fact that the goal of ethnography is not to for one piece of data to be representative of a population, but to reveal something about social processes.

Documents and Texts

Discourses and doctrines, about how start-up culture is performed, are transmitted and encultured, including consumption of media, social learning and formal education (Lizardo, 2017). Thus, these are important data sources. Fanon (1952) refers to a "a constellation of postulates, a series of propositions that slowly and subtly—with the help of books, newspapers, schools and their texts, advertisements, films, radio—work their way into one's mind" (p 152). Media materials are also data sources. I was

interested, at some point in including an analysis of video, like TED talks and YouTube videos, that Nairobi's entrepreneurs contribute to and reference. The constraints of including another typology of analysis proved too great.

Texts are also often the first material embodiments of a narrative. Their production requires abstract imaginaries to be made more precise. The only documents that I did not acquire through the internet are business plans. I read both Pronto's and LightUp's business plans, as an introduction to their organisational expectations and imperatives. The documents were simultaneously obsolete and in flux, given that, particularly in the case of Pronto, they changed according to the audience.

Researchers have debated whether the location of documents on the web has a material effect on them as a data source (Paasonen, 2010). This, I believe, to be a question of the kind of analysis that is being conducted. Since my analysis of these documents was thematic—aside from the fact that this part of the research would have been hampered by the absence of a search engine—their placement in cyberspace was not material (Herring, 2010). Archived news media that spoke about the technopolitical drama around the liberalisation of Kenya's telecommunications market, was particularly useful in capturing the key players and what was at stake. Academic scholarship that engages with that era is also a main source of information.

3.3 Critical Discourse Analysis and Narrative Inquiry

The relationship between meta-level discourse and micro-level practice is a central theme of this research.

> […] critical approaches aim to denaturalize discourse to show how taken-for-granted, naturalized ideas are unnatural and ideological and how they are related to social structures. Discourses define particular meanings associated with sets of concepts, objects, and subject positions, thereby shaping social settings, their power relations, and what can be said and by whom. Discourses are not merely talk; they are performative and produce particular versions of social reality to the exclusion of other possibilities, thereby substantially shaping socioeconomic, institutional, and cultural conditions and processes. (Greckhamer and Cilesiz, 2014, p13)

This research has to pay attention to the distinction between individual and group narratives, and national and global discourses—one that is then reflected in the analytical tools that are used to engage with them. For my purposes combine two methods—critical discourse analysis and narrative inquiry.

Critical discourse theory is particularly interested in power, hegemony and hierarchy and is suited to an inquiry that seeks to revisit dominant assumptions (Alvesson and Karreman, 2011; Greckhamer and Cilesiz, 2014; Wickham and Kendall, 2008).

> Critical approaches to discourse analysis assume that ideologies and power structures shape the representation of "knowledge" or "facts" about "reality" from the perspective of a particular interest with the objective to naturalize ideological positions, that is, to win their acceptance as being nonideological and "common sense" by hiding them behind masks of naturalness and/or "science" (Greckhamer and Cilesiz, 2014, p 13)

In this research CDA reveals how actors interpret, appropriate and apply sociotechnical imaginaries and development doctrines, and how this is also a process of relegating localised knowledge and ways to a subaltern position in knowledge hierarchies. Narrative inquiry is often employed when researchers are interested in temporality i.e. those that are producing life histories or biographies (Bryman, 2008) and when interested in lived experience and actors' ontologies (Jones, 2017) Narrative analysis is a process that goes beyond mere translation of concepts, to interpretation of the meanings that actors attribute to them (Blaikie, 1993; Jones, 2017) (Blaikie, 2005).

Combining critical discourse analysis and narrative inquiry produces an approach known as critical narrative analysis (CNA) (Kaiper, 2019; Souto-Manning, 2014; Webster, 2007). CNA is the approach used to analyse the micro-level data but in order to maintain the distinction between scales—I will refer micro-level narratives and meso, macro, and global discourse. CNA is interested in the interaction between the two (Kaiper, 2019; Souto-Manning, 2014) but at the level of the individual. Souto-Manning (2014) critiques approaches that make methodological distinctions that translate into not being able to able apply CDA to individual narratives, and on this point we agree. However, given the fact that my analyses operate at the level of the nation, the arena, and the individual—it is important to convey how each context generates particular methodological imperatives and kinds of data. The policies generated by nations and individual livelihood discourses might be influenced by the same discourses, but the structures of influence and their effects vary. It is important

when working across scales to pay attention to the methodological imperatives that emerge from switching between levels (Lizardo, 2017).

Typically, narrative analysis is conducted on interview data and I considered actors' self-representations to be the primary data source for narratives. Another source of narratives is the weblogs. These, of course, were not solicited by me as the researcher. When textual data is subjected to a narrative analysis, it is often an analysis of its form as a piece of literature. Blogs intended by their authors to act as diaries, however present the kind of information that can produce biographical narratives (Carroll et al., 2010; Herring, 2010). They are often written in the first person and reveal a lot about an actor's identity construction and trajectory. They are also not revised to reflect the actors' changing perspectives so they provide a useful snapshot of how experiences have altered a person's outlook. Where possible, I interacted with an interview subject's blog, in addition to speaking to them in person.

Thematic Analysis

The methods generated 1326 tweets; 265 pages of field notes and 57 formal, transcribed interviews, and hundreds of emails and blog excerpts. See section 3.2 for details on how each typology of data was gathered. This was a lot of information and as the research proceeded, I would organise it thematically in an Excel document (Ahmed et al., 2019; Jones, 2017; Nowell et al., 2017). One theme, per Excel sheet. The columns were headed:

No.	Evidence/Quote	Name	From	Date

These sheets also included quotes from the literature that I felt were relevant to the data theme in question.

In-keeping with the goal of generating situated, actor-centred knowledge, the themes emerged inductively. "Inductive analysis is a process of coding the data without trying to fit it into a pre-existing coding frame or the researcher's analytic preconceptions. In this sense, this form of thematic analysis is data-driven…" (Nowell et al., 2017, p 8). The first themes were related to 'hype' due to the debate that was in progress when I arrived in Nairobi. Themes were often consolidated when they seemed to overlap. For instance, 'hype' eventually ended up under the theme 'Visions, expectations and aspirations' (see below). Even though thematic organising was an ongoing exercise, it took several months after field work to reorganise it into manageable categories. Nowell et al. (2017) indicate that it is typical for data collection and data analysis to overlap. During this desk bound period, I also gathered more documentary data on the historical contexts that were relevant to the inquiry around the interaction of global discourses and individual narratives.

Finally, I organised the information thematically into a 60 paged Word document entitled 'Data Summary'. The following is a list order of the headings of thematic areas:

i. Liberalisation of the communications sector

ii. Increasing focus on technology for development (tech4D) as a component of the development agenda
iii. Government policy—trajectories and effects
iv. Dr. Bitange Ndemo's tenure as Permanent Secretary in the Ministry of ICT
v. Infrastructure
vi. Presence of ICT expertise
vii. M-Pesa and Safaricom
viii. iHub, Ushahidi, Kenya Blog Web Ring Community
ix. Visions, expectations and aspirations
x. Ideology
xi. Necessity [versus opportunity as a rationale for action]
xii. Enabling environment
xiii. Contestation between tech4D and tech4$
xiv. Identity
xv. Ownership and authority
xvi. Trust and accountability

Under each theme is data that had been produced by from each data collection mechanism. Therefore 'Visions, expectations and aspirations' for instance, contained direct interview quotes, tweeted comments, blog excerpts, emailed views which represented individuals perspectives on what they saw as desirable or expected. There was a consistency of sentiments within themes. Whenever there was contestation, this was reflected in the theme title. The initial drafts of the thesis emerged from this document, and some of this is still evident in the organisation of this document.

3.4 Access and Positionality

Reflexivity is important for interpretive research—my positionality informs my interests and indeed, my epistemic journey. The epistemic diversity which is a hallmark of my analytical approach is reflected in my interest in understanding particular aspects of power asymmetry and how they are explained and anaysed in a variety of disciplines. I position myself as cosmopolitan, Western-educated post-

colonial scholar. For many in Africa, individual aspiration is connected to process of Westernisation, through education and/or inclusion into formal economic systems (C. Katz, 2004). My trajectory has led me to a post-colonial perspective, one that has emerged out of Western knowledge systems. Locating my position is important for post-colonial analysis.

> Postcolonial politics are a politics of positionality – where I position myself and am positioned by others in an imbalanced power relation undergirded by a colonial logic – rather than a politics of location, grounded in a particular localised space. (Lentin, 2019)

Ethnography, and anthropology more broadly, have been critiqued in the past for claiming to represent the perspectives of those who are being observed (Watson, 2014). A critique which has been taken on board as most scholars in these fields rarely make this claim. Instead, most academics make clear that the empirical data is interpreted through their chosen academic analytical frameworks. Frameworks that many actors are unfamiliar with and/or do not consciously use to interpret their lifeworlds. The opportunity afforded by ethnographic methods, however, is to be proximal to the standpoint of the researched (Rinaldo and Guhin, Forthcoming). I expected that the ethnographic research would benefit from my standpoint as a native researcher (O'Mahoney, 2014). I was raised in Nairobi, and had a similar background to the digital entrepreneurs who are the subject of the research. My standpoint both as a scion of Nairobi and as a Western educated researcher is relevant to the validity of the interpretations. My positionality as an STS academic means that I was critical of innovation and entrepreneurship discourse in a locale where actors were less so. The

excerpt below speaks to the relationship of my standpoint a researcher and that of the actors I am observing:

> The subject exists and speaks and writes for audiences of both African and Euro-American readers and listeners. The agent-the writer-acts, does, performs, and writes, and above all exists and is identifiable. He or she is not merely a culture voicing itself nor a conduit for a language but a locus of contests and conflicts of an autonomous self. (Slaymaker, 1996)

I often encountered the expectation that my educational background indicated knowledge of, and therefore attachment to Western norms. This expectation would not be too far off the mark, but ironically, my studies of STS have changed how I think about the universality and value of knowledge. One can speak of analytical rigor, superlative comprehensibility, but not universality. When we talk about provincializing STS the goal is to make it locally relevant, and also introduce local gnosis and understandings into the body of knowledge and avail it for everyone's use. The tendency is for unidirectional engagement where Western thought explains all social action, without concern for how subjects interpret their world (Mudimbe, Sabaratnam, 2017).

My analysis reflects my positionality, but is also informed by an actor-oriented approach that is "grounded in the everyday life experiences and understandings of men and women" (Long, 1992, p 5) and therefore reflects the positionalities of the actors in question. Many digital entrepreneurs are also bilateral actors, seeking to reinterpret a Western sociotechnical imaginary (Jasanoff and Kim, 2016; Sadowski and Bendor,

2019) and discourse to their environs. I am uniquely placed to understand their cosmopolitan aspirations and how it connects to similar milieus (Katila et al., 2019) around the world.

Ngugi wa Thiong'o's (1986) Decolonising the Mind, encourages the use of African languages to think and write, not only to infuse African philosophies into creative and academic works but to enable particular understanding. Mazrui's perspective is that wa Thiong'o is linguistic determinist (1993, p 353) but also observes that a French Marxist is French before they are Marxist (Mazrui, 1993, 2013, 1986). He is referring to an ideological position that is informed by cultural contingency, rather than strictly by language (Mazrui, 1993). This research adopts a similar perspective on language. And applied the broad perspective of CDA, which views discourse as ideology that has been made textually concrete and can direct practice. My ability to understand the language and cultural contingencies of the actors

A number of friends have become involved with the digital entrepreneurship arena. Even without these connections, it is not particularly difficult to engage with the arena, because it thrives on visibility. In fact, the number of researchers and journalists working on various aspects of the arena made it so that respondents were practiced interview subjects. The fact that entrepreneurs were often pitching their ideas also meant that it took a while to break them out of their practiced narratives and performances. A semi-structured interview style was a useful tool for making the interview much more conversational. I also made the decision not to interview actors

who I came to view as 'the usual suspects'. These individuals were members of a collective that had been known as the Kenya Blog Webring (see section 5.4). Over time their profiles had grown and were often seen as champions, leaders or gatekeepers by some of the actors. Their views could be gleaned from the web logs that they had contributed to as part of the blog ring. I spoke to a number of them informally but primarily reflect their views through their blog entries.

Many of the sites for participant observation were open to the public. I claimed my role as a researcher as often as possible. Even though I did not intend to attribute conversations to any actors, I did not want them to feel deceived by our interactions in any way. Despite my cultural and personal connections, I am still an outsider looking in. This position is partially a product of the fact that, over the past 17 years, I have not lived in Nairobi for a period lasting longer than three years. Since all my post-secondary studies have been obtained abroad, my academic and ideological perspectives are decidedly globalised and 'Western'. To illustrate, when in Kenya, I have had experiences where my point of view has been considered naïve or incongruous, given the local realities. This proves useful to the data gathering enterprise as it means that respondents may go to greater pains to acquaint me with their rationales and outlooks. As a result, I am also keen to ensure that I do not impose my visions and expectations. The other source of distance is my critical perspective. For the most part, the culture of digital entrepreneurship requires irrepressible optimism about the opportunities it represents. I was keen to ensure that I did not impose what may come across as critical radicalism or deflate individuals who are in

the midst of building livelihoods and producing life success according to their values. From my perspective a decolonial methodological approach should seek to present the experience of the research subjects from the perspective.

3.5 Reliability and Validity

A paradox in social science research is that it cautions that there is no research that is lacking in subjectivity, and yet emphasising objectivity as a source of validity. Standpoint theorists deal with this paradox by making subjectivity endogenous and desired (Harding, 2011; Rolin, 2009). Standpoint research takes the position that "contingently, with respect to particular epistemic projects, some social locations and standpoints confer epistemic advantage" (Wylie, 2004, p 346). In the case of this research, its validity stems from its ability to be proximal to the actors' social location and positionality (O'Mahoney, 2014; Rolin, 2009; Wylie, 2013) and confirmable (Bryman, 2008; Nowell et al., 2017). The tendency towards construction of confirmation narratives observed by Deuten and Rip (2000) (see Section 1.3), however, is a tendency that I needed to mitigate against. Observation combined with interviews was one combination of ensuring reliability of an individual account. Validity and confirmability originates from the richness of collaborating accounts, and other forms of triangulation that emerge from ethnographic research (Nowell et al., 2017; Pollock and Williams, 2013; Rinaldo and Guhin, Forthcoming). Using multiple sources of data is a means of ensuring not only the depth of the analysis, but its

reliability. When it came to the distant past I relied primarily on historical methods—the use of archived documentation

Qualitative analysis can often be accused of cherry-picking data. I do not necessarily view this as an issue, given that many social theories upon which social science is built are single case studies or single researcher thought experiments. Nevertheless, the goal of centring the actors' interpretive frameworks compels a means of ensuring that the selected themes are of the site, even if they do not aim to be representational. My observations are confirmable (Nowell et al., 2017) and supported by interviews, emails, social media commentary, policy documents, other academic research and media articles. A disinterest in representation is not because these experiences are unique to Nairobi per se, but because ethnographic research is not designed for representation. A study that applies these methods in another setting and uses the same themes for data collection would produce an opportunity for comparison that could produce a basis for a conclusion that could be generalised between places.

Reflexivity is a social science tradition, and I have aimed to locate myself within a particular set of interests and disciplinary modality. In addition, my positionality is an asset of the methodology particularly since it is interested in producing situated knowledge (Wylie, 2013). Even though one can never fully inhabit another's frame of mind (Rose, 1997), being an indigene is likely to increase the validity of the conclusions I make about how subjects view themselves and what values and meanings they ascribe to various elements of the system (O'Mahoney, 2014). For

instance, I am well-acquainted with the aspiration to 'global' status. It is the reason why I and many others leave to study abroad. My standpoint is not only as an urban Kenyan, it is also as an emigre who is familiar with Western norms. My education has facilitated a theoretical understanding, while my lived experience generates an inherent knowing.

3.6 Ethics and Data Protection

I went through the formal processes laid down by the School of Social and Political Science's ethical review process. This entailed filling in a self-assessment questionnaire that determined what level of ethics review one's research required. Based on my responses, I qualified on a stage 1 review. I also applied for and received a research permit from NACOSTI, the institution that grants research permits in Kenya. This entailed being attached to a local research institution and I was affiliated with the British Institute in Eastern Africa.

The traditional concerns related to free and informed consent were addressed by the preparation of consent forms and providing them to interview respondents (Schroeder et al., 2018). I guaranteed confidentiality and anonymity to interview subjects. My field diary was locked in a drawer in the bedroom at my mother's house. All other data was located on my laptop computer, with the intention that all written and electronic data would be erased/destroyed after the publication of the thesis.

Beyond following this official protocols, I was interested in operationalising a decolonial approach which views research participants as participants and holders of expertise, particularly when it comes to their own experience. The last step in this methodology would have been to have them read over drafts of this document and have that included as data—however, time constraints as well as a sense that PhD thesis should be individual works led me not to deploy this final step. A related issue is that of anonymity. In social science research, when in doubt about the impact that direct attribution might have on research participant, it always best to anonymise them as sources.

Given the politics of the arena, at the micro and macro level, the pragmatic approach was to anonymise the data. Direct quotes often have clues about speakers' identities and I have made every effort to ensure that firms and individuals are not identifiable from the information provided, by not quoting people directly if they can be identified. The KICTANet email archives were a particular quandary. On the one hand they can be easily found using an internet search engine. Just because they are public does not automatically render them fair game (Markham and Buchanan, 2015). Furthermore, it was unlikely that authors of blog entries, emails or social media comments, not matter how public had anticipated that they would be used for research. The requirements for empirical validity need to be balanced against ethical concerns. Researchers have not come to a consensus on the issue of privacy of online materials (Bryman, 2008; Markham and Buchanan, 2015; Sparks et al., 2016). This meant that I had to utilise my discretion on the trade-offs between using internet-based data, and making

decisions about how it was presented. In recent times, it is increasingly clear that past internet-based commentary can haunt actors in the future. Riedel (2018) who used blog as a data course, struggles with similar issues in her PhD research and concludes that using past entries in blogs is less problematic than social media's real-time commentary (Riedel, 2018). Presumably the fact that the information has been publicly accessible for a long time suggests that the individual(s) stands by their statements. Social media data, however, was very useful because of they were often reactions or conversations—and these yield good data on individual's sentiments. I used guidelines codified by the Association of Internet Researchers (AoIR) (Markham and Buchanan, 2015). Markham and Buchanan (2015) advise that rather than focussing on content, one should focus on the blogger/commenter's intent when making decisions about harm or vulnerability concerns (p 611). If authors linked to their blog entries, encouraged readership and engaged with commenters, this was a sign that the information could be used. These considerations and the exhortation of Markham and Buchanan (2015) to err on the side of caution, further encouraged me to limit my use of direct quotes or excerpts and present information after it has been filtered through my analysis. Anonymising entries by paraphrasing the information was one solution, but also had the effect of having the researcher reinterpret declarations, rather than allowing the respondent to present their perspective and have the reader decided whether the corresponding analysis is appropriate, given that misrepresentation and validity are also ethical considerations.

This quandary about effects in the future, also began to affect how I felt about representing public events. While I do not expect the thesis to be widely read in Nairobi, I have misgivings about data affecting the ties in the community. This is an issue that researchers like David Mosse (2005) have had to address after publication of their work. The preface to *Cultivation Development: An Ethnography of Aid Policy* was both instructive about the sensitivities that might arise and of the fact that is practically impossible to avoid them given the critical perspective of the research. In the end, I had to err on the side of empirical validity and used in text citations and references as means for verification.

4 GLOBAL TECHNOPOLITICS OF LIBERALISING THE TELECOMMUNICATIONS SECTOR

A natural beginning for a research project that is concerned with Nairobi's digital arena of development is an analysis of the liberalisation of Kenya's ICT sector. The arena of development may not exist yet, but the expectations that will shape its emergence are being set. An analysis of the process and rationales for liberalisation are a window into the relationship between local and global policy discourses. The analysis shows that authority and agency are context dependent. In this case, external, global actors hold discretionary power and they are even able to create the master narrative of global economic development but also of Kenya's trajectory.

There are two examples of constraining discursive contexts in this chapter. The first is the aforementioned liberalisation of the ICT sector, as an outcome of coercive structural adjustment programmes (SAPs). The second is evidenced in the process of establishing a global governance regime for the internet—specifically, the World Summit on the Information Society (WSIS) process. The two examples represent two different approaches to the universalisation of ideas related to the structuring of sociotechnical systems. The discussion in section 2.4 explains the perspective of power and agency as positional and relational. State actors therefore, have more authority than the local multistakeholder advocacy organisation Kenya ICT Action Network (KICTANet). Despite the differences of contexts and agency, relative to one another, Kenyan actors as developing country representatives, have similar status in both

processes. Both of these actor groups act within policy selection environments in which external, primarily Euro-American, international policy actors have more influence. Global and local agendas are linked in complex patterns of alignment and resistance. Strategic agency is displayed by local actors through resistance and alignment.

In present-day narratives of the arena of development, the Moi government is recalled as neopatrimonial and having mismanaged the public sector, including telecommunications service delivery. Upcoming sections will discuss how the Kenya government received outside pressure from international economic policy organisations to liberalise the telecommunications sector as part of a package of reforms. Liberalisation of the telecoms market begins towards the end of the twenty-four year tenure of President Daniel Toroitich arap Moi (1981-1997), but it takes a new government regime to privatise the government-run Kenya Posts and Telecommunications Corporation (KPTC).The government of President Mwai Kibaki, succeeds the Moi regime, fairs slightly better in present-day assessments because its approach to economic development better matches the desired reforms: freedom and free markets. It also ushers in an era when civil society is welcome to contribute to the crafting of the national sociotechnical imaginary.

The change inside the country mirrors a newer, less inflexible approach to global governance—one that aims to generate international consensus rather than enforce compliance. A change from strict conditionality to consensus building, nevertheless,

continues to reflect global power geometry and coloniality as the wider discursive context is often predicated on a linear telos of progress that emerges out of a modernising philosophy. While modernisation theory has been rejected from developmental discourse, it is difficult to characterise the framing of progress as the adoption of highly specific practices as anything else.

4.1 Telecoms and the Politics of Reform

In Kenya, in the late nineties, agitation for regime change grew in intensity, the parastatals (national public sector corporations), symbolic of decline due to mismanagement, were focal points for reform (Ikiara, Mukiira & Nyangena, 1999; Hornsby, 2012; Joseph, 2013; Nyairo, 2015). Because they are social assemblages, all industrial sectors are political, however, the information and communications sector is tied directly to electoral politics and governance. In addition, telecommunications technologies, digital technologies in particular, have been cast as expanding freedoms and access to knowledge. They have become implicated in the good governance agenda. Therefore arenas of advocacy for these technologies are often politicised spaces. Digital technologies were a material link to allies and supporters outside the country. They, thus, became a point of advocacy for rights around communication and freedom of association. This link between ICTs and progressive development agendas persisted and was a focal point for contestation during the period of my ethnography.

Amongst those I interview, the narrative of the arena of development is tied to that of national political reform. In their recollection, the regime of President Daniel Moi

maintained a vice-like grip on the operation of national monopolies (Akumu, 1999; Hornsby, 2012; Ikiara et al., 1999; Park, 2017). Actors in the arena are my contemporaries and we therefore have similar recollections of the Moi period. We remember the Moi regime to have been repressive. We recall assuming that phone calls were monitored, for instance. These reflections on the Moi era are prone to be influenced by received memory.

> I grew up with a father who was a politics junkie – no surprise that I become one myself. He did not live long enough to see the end of the Moi era, so most of my memories of political discussion in my household involve epithets being hurled at Moi or at the news (which especially in the 80s was really Moi). Also have memories of me helping him find the BBC or VOA on the shortwave radio, because this was the closest Kenyans could get to independent media. And you had to listen with the volume low, with copies of Gitobu's weekly paper hidden (and my mother in a panic), because you didn't know who was spying and when you could get labeled as a Mwakenya member. (Kenyanpundit, 2010)

The affective sense that the Moi years were repressive is prevalent and supported by peer-reviewed and published secondary historical sources (Abwunza, 1990; Cheeseman, 2015; Hornsby, 2012; Lynch, 2011; Nyairo, 2015; Throup and Hornsby, 1998). The author of the excerpt, is of my generation, and while she describes her own experience growing up, the influence of her parent is also evident. Thus, it makes sense to contrast these recollections rely on written reports and histories of that period. The prevailing evidence is that the government of President Daniel Moi did mismanage telecommunications institutions and infrastructures and use it for political purposes and to stymie reforms. The excerpt below from a report for the UNCTAD led CAPAS

(Coordinated African Program of Assistance for Services) illustrates the commonly held view of the Moi regime's management of the telecommunications sector:

> Until the beginning of July 1999, postal and telecommunications services were provided solely by the state-owned monopoly, the KPTC. However, as a result of over-staffing, poor management and lack of competition, KPTC came to be associated with inefficiency, poor quality services and corruption. (Ikiara et al., 1999, p 35)

Mwai Kibaki, former technocrat and Minister in the Moi government, is one of the leaders of the opposition. Actors in the ICT sector in Kenya often credit, sometimes begrudgingly, the subsequent government of President Mwai Kibaki which had its tenure in 2002 – 2012 with the creation of ideal conditions for the development of the ICT sector. This is evident in emails shared between members of KICTANet (Hussein, 2015a; Kivuva, 2015a; Mungai, 2006; Sidarec, 2006). For instance, when the Auditor-General questions government expenditure on fibre-optic cable infrastructure:

> This is the sort of myopic thinking that will take us back to the pre-internet days when Moi banned fax machines. Saying NOFBI is not economically viable is like saying that our road networks are not economically viable. Seriously? The one thing I'd agree with in that report is that it has definitely been under utilized. No argument there. That's where the Multi-Stakeholder model should kick in. I have always said that to leave ICT Infrastructure roll-out purely in the hands of the private sector is not the best strategy. Private and public sector must work hand in hand to ensure Universal Connectivity is available to the furthest corners of this country. The Giants in Government who thought and executed NOFBI must have our gratitude forever. (Hussein, 2015b)

The excerpt points to an inherent contradiction in the discourse. Governments were encouraged to facilitate increased access to telecommunications technologies for the purpose of economic development. Yet, a developmentalist discourse that characterises post-colonial states as "a paradox of inadequacy and indispensability" (Hansen and Stepputat, 2001, p 2) also presented these technologies as solutions to poor-governance, and as means to circumvent government because the private sector was more likely to operate rationally. That the Moi years were repressive is well documented and supported by peer-reviewed and published secondary historical sources (Abwunza, 1990; Cheeseman, 2015; Hornsby, 2012; Lynch, 2011; Nyairo, 2015; Throup and Hornsby, 1998). The Moi government's actions resonate with the narrative infrastructure that casts African governments as particularly pernicious (Hansen and Stepputat, 2001; C. Katz, 2004) and that

> --enables the North to enforce a range of destructive policies, including punishing 'structural adjustments' that drive up prices (Katz, 2014, p 244).

At the international level, corruption and the unwillingness to enact neoliberal capitalist regimes, were increasingly identified as the primary reason for development failures amongst developing countries (Grosfoguel, 1996; Hansen and Stepputat, 2001; Tsing, 2011; Whyte and Wiegratz, 2016). Anti-corruption, digitisation, democracy and free markets are often connected in the broader discourse on progress. Because they are social assemblages, all industrial sectors are political, however, the information and communications sector and its ties to democracy and as means of people to make themselves heard ties it more directly to electoral politics and

governance. Anti-corruption and pro-privatisation, however, have no apparent causal link, but the narrative infrastructure of reform associates democracy with a free-market economy. This, although, clientelism is also a hallmark of capitalism, but one that is elided or downplayed by its proponents. Therefore, the solution to the graft and mismanagement of Kenya Posts and Telecommunications was to privatise it—sell it to a global conglomerate.

Since inception, contemporary international developmentalist doctrine has been interested in encouraging the global adoption of capitalist democracy as opposed to authoritarian communism (Rostow, 1960; Grosfoguel, 1996). One way that this is possible is through the control of global funding regimes and economic development institutions. After the Cold War, international development banks became more explicit and strict about making their lending contingent on the adoption of particular approaches to governance (Hecht, 2011). It also included a narrative about neopatrimonial[5] venal states that needed to be treated with a firm hand (Mkandawire, 2015).

[5] Neopatrimonial because according to analysts the patrimonialism that is in evidence in African states is different from preferred types (Mkandawire, 2015).

> The new way of thinking held that the marriage between tradition and modernity was not only unhappy (albeit inevitable), but also lethal to the partners and their offspring; Africa had somehow managed to combine features of tradition and modernity into a debilitating witch's brew (p 567)

The approach is known as the Washington Consensus—policy prescriptions described by their proponents as 'shock therapy' or 'strong conditionalities' that would assure national development, but essentially were targeted at countries that were failing to adopt the neoliberal doctrine of market deregulation (Cheeseman et al., 2019; John Williamson, 2007; Williamson, 2016). In the late nineties the government of Kenya is undergoing this shock treatment. The Bretton Woods organisations had immense leverage as they were providing much needed budgetary support during a period of global economic decline. The discursive regime includes a self-imposed mandate for the developmental configuration to intervene in ways that may previously have been seen as impinging on sovereignty (Hecht, 2011; C. Katz, 2004; Mbembe, 2001b; Sabaratnam, 2017; Shakya, 2017).

Local activists often aligned themselves with perspectivs that were critical of the state and also provided support and resources for reform (Nyairo, 2015; Throup and Hornsby, 1998). For third sector actors in Kenya, the global neoliberal project presented an opportunity to challenge the local political structure (Nyairo, 2015; Throup and Hornsby, 1998). Activists who might otherwise look askance at the effects of the SAPs on the economy, were allied with the developmental configuration in the goal of pressing the state to adopt multi-party democracy. They therefore become members of the developmentalist configuration. This is exemplary of alignment as a

result of constrained agency. In this case, these actors are constrained both by the state, and by the parameters through which they can receive international support for reforms.

4.2 Privatising KPTC: State-led Developmentalism and its Clash with Liberalisation as Modernisation

The history of the arena of development relates to and is partially explained by the global impetus to liberalise the telecommunications market. The rationale for liberalisation is often blamed on the failures of a neopatrimonial state to develop robust national economies. KPTC was but one of the parastatals (government owned and run corporations) earmarked for privatisation under the structural adjustment programmes (SAPs) administered by the Bretton Woods organisations. As one of the largest, technology-led parastatals, KPTC, represented a site at which the national, sociotechnical narrative could be enacted. Many analyses present the government's reluctance to privatise national corporations as a factor of President Moi's interest in maintaining his hold on power (Hornsby, 2012; Kenya African National Union, 1960; Lynch, 2011; Throup and Hornsby, 1998). This fits with the narrative of reform alluded to in the previous section.

Mkandawire (2015), however, warns of the danger of the neopatrimonial framing of African governments:

> […]the logic of neopatrimonialism amounts to the rational pursuit of self-interest by a "big man" and his close cronies (very much like Mancur Olson's rational,

> calculating, stationary bandit) in a context whereby the majority is driven by affection, primordial ties, ritual, and superstition, and is so mesmerized by the big man that its members often act in ways at odds with their own interests in the forlorn expectation that some of the crumbs of patronage will fall their way. there is little explanation for the arbitrary restriction of the domain of individuals' rational behavior. as Abdul Mustapha notes, it is "a reductionist perspective on African politics which robs non-elite groups of political agency (Mkandawire, 2015, p 568)

Mkandawire (2015) indicates that neopatrimonialism is problematic not only because it is reductive but it fails to explain why African's economies declined. The various iterations of modernisation theory, fail to attribute underdevelopment to historical and contemporary extractive practices and exploitation by former colonial countries and companies and modern multinationals (Amin, 1972; Escobar, 1995; Fanon, 1961; Mkandawire, 2015; Wallerstein, 2004, 1995; Zeleza, 2009). While this section confirms that the Moi government does play into stereotypes and is patrimonial, this is indeed not a full accounting of the reasons for decline. I also propose a different analysis for why the government is reluctant to privatise national corporations. I frame it as ideological resistance—a government resisting on principle. The principle in question is adherence to a nationalist philosophy for development and an alternative sociotechnical imaginary rooted in African communalism.

As a result of market and institutional reforms connected to the donor conditionalities, KPTC is split into three entities, and its right to monopoly over certain services is repealed by an Act of parliament (Kenya Communications Act, 1998, p 279) as the first step in a process that would lead to privatisation of some of its institutions. Three

entities emerge—Telkom Kenya (and its mobile phone operator, a subsidiary known as Safaricom), Postal Service and Communications Commission of Kenya (CCK) (now Communications Authority of Kenya (CA)) (Information Gatekeepers, 2000; Kenya Communications Act, 1998). Of the three, only Telkom was to be put on the market. The Postal Service remained a national parastatal. The regulatory powers over the telecommunications sector were allocated to the CCK. This section explores resistance towards the imperative to liberalise the market and privatise Telkom Kenya as a quest to preserve a philosophy of governance, rather than (only) an interest to maintain power by a dictatorial government regime, as is the typical interpretation of the government's rationale.

The Nyayo Philosophy

President Moi espoused a nationalist philosophy known as Nyayo (Abwunza, 1990). Nyayo references a socialism, characterised as inherently African. It was a communal ethos that had apparently been practiced by our ancestral forebears (Abunzwa, 1994)[6]. Its governance doctrine combined nationalism and paternalism—the nation was to

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[6] The two broad typologies of African political philosophy that emerge as a reaction to colonialism, is that Africans can also be modern (Senghor, Kenyatta), which contrasts with the ideology that African ways are different, but equally valuable (Nyerere, Nkrumah, Toure, Moi).

follow in Moi's footsteps (nyayo) the leaderof KANU, the Kenya African National Union. KANU was the only political party to which a citizen could belong. The saying 'KANU ni baba na mama' [KANU is father and mother]', came to represent the governing principle of the relations between the state and citizens (Kenya National Assembly Official Record *(Hansard)*, 1999, p 30).

The government, and therefore KANU, owned and operated the national corporations, or parastatals that provided utility services. These institutions were key to the narrative of self-sufficiency and developmental nationalism (Hornsby, 2012). Their privatisation would have been emblematic of the state losing its paternal role over the polity. Africa Telecom, a Newsletter dedicated to telecommunications in the Middle East and Africa, reports that during the market liberalisation period, KPTC attempts to make infrastructural and management improvements in order to expand its services but is limited by a lack of capital:

> Recognizing the increasing significance of data, KPTC has set up a fully-fledged division to exploit its capacity to provide data services to its clients. [...] Presently, KPTC has to finance its capital program from internal cash generation. This is as a result of an embargo imposed by the World Bank group until the telecommunications sector is reformed. With the upcoming sector reform, multi-lateral financing is possible, however private capital is expected to play a bigger role in network expansion than donor financing. Investment in the sector is severely limited due to lack of external financing. Cash generated internally has been largely applied to maintenance or in investment in high priority links to ensure resilience in the network or the establishment of high end services which will bring in cash rapidly. This has been the case in the implementation of NX64

> network, GSM cellular, and wireless in the local loop project. Others include the digitalization of the backbone to western Kenya. (Information Gatekeepers, 2000)

Without an influx of capital, the state-owned corporation could not become more efficient. The end of colonialism had spelled the end of the established patterns of capital influx, and the global private financial sector did not fill this shortfall. The development banks, for a long time, are a significant source of capital for infrastructure investments, hence the ability of these banks to dictate global economic policy. Since the end of World War II, however, the developmental configuration encourages the adoption of capitalist democracy as opposed to authoritarian communism (Rostow, 1960; Grosfoguel, 1996). One way that this is possible is through the control of global funding regimes and economic development institutions. The survival of the communalist philosophy was dependent on financing but the policy environment was one where a neopatrimonial state was frowned upon (Mkandawire, 2015). The neoliberal doctrine cannot fully circumvent the state, and only serves to restructure the existing moral economy and entrench perverse incentives in wider society (Fanon, 1961; Mbembe, 2001a; Ndlovu-Gatsheni, 2018; Wiegratz, 2010).

> […] the embedding of neoliberalism changes not only the political economy but also the moral order of local markets, families, communities and the country at large. This political and societal process of moral restructuring seemed to be mainly driven by the interests, norms, practices and projects of sections of the domestic power elite, as well as foreign donors, organisations, corporations and special interest groups. The process is ongoing, nuanced, contradictory, pervasive, speedy and contested, and has led to a range of severe, complex and connected problems […] (Wiegratz, 2010, p 133).

The previous section has highlighted that the view of the parastatals asa means for political actors to exercise political patronage, nepotism and cronyism (Hornsby, 2012; Nyairo, 2015; Park, 2017; Wikileaks, n.d.) made it a target of reforms. One could argue that these practices, while an anathema to modern approaches to managing social reproduction and the management of resources,are extensions of a communalist ethos

It is worth remembering that as recently as forty years ago, the world was embroiled in an ideological struggle over philosophies of development (Hecht, 2011). After independence, Third World[7] countries collectively opposed the nature of their insertion into the global capitalist economic system (Escobar, 1995; Hecht, 2011; Mudimbe, 1990; Tsing, 2011; Zeleza, 2009). At a meeting for newly independent states in 1955, the Afro-Asian Bandung Conference hosted by Indonesia, these states

[7] While the term 'third world' has since developed negative connotations, in the post-independence world of the fifties and sixties it referred to nations that desired to remain non-aligned to either the first or second worlds and represented a particular set of ideologies (Hecht, 2011). Third World is used here to indicate a doctrine and the countries associated with it. Ultimately, it is also an epochal term since its usage declines as much of the world shifts to accept the neoliberal worldview. Prior to the end of the cold-war, the Third World attempts to develop its own alternative paths to development—the so-called Non-Aligned Movement—were often foiled by the two major parties in the cold war who viewed them as proxy sites for the debate over democratic capitalism and communism (Tsing, 2005; Hecht, 2008).

developed a set of principles which they viewed as alternatives to those offered by the First and Second Worlds. The principles included respect for sovereignty and self-determination, and an end to exploitative relations (Hecht, 2011; Tsing, 2011). In the intervening period between the Bandung conference and the end of the Cold War, Third World countries experimented with a variety of approaches to development and many, including Kenya, opted for forms of developmental nationalism or neopatrimonialism (Abwunza, 1990; Grosfoguel, 2002, 1996; Hornsby, 2012; Mkandawire, 2015).

Broadening the context

Kenya's economic dire straits were not all the fault of the Moi regime. Viewing economic decline as an outcome of geopolitical dynamics at the global-level, however, is not only accurate, it also provides a context for the international policy environment. A combination of factors that were affecting the progress of a number of developing countries: global economic upheaval stemming from the oil shocks of the seventies (Joseph, 2013), continued reliance on colonial patterns of extraction and primary production as a source of foreign exchange (O'Connell, 1967; Zeleza, 2009), and the end of colonial era access to capital from global finance centres (C. Katz, 2004). Adding austerity conditions to this scenario had a deleterious impact on standards of living:

> The Kenyan government reported that from 1980 to 1996 there had been virtually no improvement in the living standards of the population and the welfare of the majority of people had declined, as measured by the increase in the number of

> Kenyans living below the absolute poverty line. Moreover, the number of the unemployed and underemployed rose during the same period, 1980–1996. Employment opportunities were not being created fast enough to keep up with an expanding labor force. More than 300,000 youth were joining the labor market every year but only 7% of them would find employment. (Joseph, 2013, p 324)

Scholarship on that time period paints a picture of stagnation and limited resources for revitalisation. Particularly since the international development banks were applying strict conditionalities to lending. The response of the government can be interpreted as a need to manage its sense of responsibility to citizens and resistance to challenges to its sovereignty.A paternalistic outlook combined with the tools of the colonial state, which still remained enshrined in law (like the Official Secrets Act), however, translate into increasingly autocratic practices (Haugerud, 1995; Hornsby, 2012). This is the underside of a paternalistic governance philosophy, which foments the liberation politics discussed in the previous section (Nyairo, 2015).

In Kenya, the process of liberalising the ICT sector begins in the late nineties—this is a delay that reflects resistance. A contestation arises between the state and international development organisations over the privatisation of the public sector-owned Kenya Posts and Telecommunications Corporation (KPTC), as a final step in the deregulation of the market:

> Today the government is having problems with Bretton Wood institutions again for failing to sustain reform as agreed. The government was expected to have sold 49 percent of the telecommunications sector before the end of the year 2000 but this has not been achieved to date. The situation was exacerbated by the Court of Appeal declaring the anti-corruption body watchdog, the Kenya Anticorruption

> Authority (KACA) illegal and the subsequent termination of all cases that the body was prosecuting. The government also failed to enact the economic crimes bill and civil service ethics legislation as had been agreed with the World Bank and the IMF (Mutula, 2002)

Moi framed the SAPs as a threat to sovereignty, and multi-party democracy as a threat to the national solidarity ethos of Nyayo (Hornsby, 2012). Without a unifying national doctrine, he expressed that the country would disintegrate into negative tribal relations (Abwunza, 1990; Lynch, 2011; Nyairo, 2015). A refusal to adopt the capitalist agenda means that the government is unable to continue to borrow money to fulfil the wage bill and run the paternalistic economy.

Hornsby (2012) notes that the President Moi "was not alone in believing that 'the new information civilisation erodes the identity and functions of the nation-state…'" (p 654). For many years, the general populace supported the paternalistic approach to governance (Haugerud, 1995; Hornsby, 2012). A form of African socialism, should presumably have resulted in the distribution of the material benefits to the public. Instead, wealth accrued to the political elite who wielded the instruments of power—the legislative power of parliament, the judiciary, and the executive (O'Connell, 1967; Wikileaks, n.d.).

> Youth employment later became one of the major reasons behind students' protests and demands on the Moi government for reform. […] Among the areas that many complained were grossly mismanaged was the civil service sector. The government increased the public sector by creating extra positions in major ministries. While the government of Kenya always used the public sector as a way to issue largesse to political supporters, the scale of expansion rose significantly

> in the decade between 1974 and 1984. […] Another economic driver of reform had to do with the state's budgetary difficulties due largely to the gross mismanagement of Kenya's public sector. One of the most significant causes of the country's budgetary challenges was a high level of losses generated by state-owned enterprises. (Joseph, 2013, p 324)

By the late eighties, KPTC was exemplary of mismanagement of public resources and of overall steady economic decline (Hornsby, 2012; Wikileaks, n.d.). Economic decline (while a few elites were emptying the coffers) led to a shift in the public mood, in favour of reform.

Market Principles

The reliance on external capital, limits the avenues of expansion available to an institution that had a waiting list of 90,000 and the ability to connect only 13,000 a year new customers to its voice services (Information Gatekeepers, 2000). Yet, rather than license private companies and allow them to service this demand, KPTC blocks their activity. This could be a reflection of the view that this sector should be public sector led, however, KPTC and later CCK are very selective about which ICTs they license and the ones they declare illegal. It is the companies that compete directly with the incumbent's services that experience the most constraint. Alternatives to fixed line telephony, like VOIP, had their legality called into question (Information Gatekeepers, 2000; Nyairo, 2015) while private internet service providers (ISPs) negotiated individual agreements with KPTC and began to operate. This, even though KPTC could not meet the demand for voice services (Information Gatekeepers, 2000). The

rules that liberalise the market are legislated in 1993, but KPTC is essentially the implementing agency. Africa Telecom predicts that the regulator, CCK, a scion of KPTC was unlikely to be impartial, despite the World Trade Organisation (WTO) rules to which Kenya was subject.

> Two issues may affect the perception of independence of the regulator. Firstly, there is unlimited discretion on the appointment of the members whose terms of appointment are set out in an individual letter of appointment. Secondly, the government will continue to have a controlling ownership of Telkom Kenya Ltd. and is the duty of the Ministry of Finance representative in the CCK to safeguard that interest. Government ownership of the dominant player in the sector may be viewed to be in conflict with independence in decision making in actions against the commercial interest of Telkom Kenya Ltd. Additionally, if the past is a guide, it is likely that the representatives for the Ministry of Telecommunications and Finance will be board members of Telkom Kenya Ltd. Viewed against the WTO Reference Paper, the regulator may be perceived to be closely linked with the Telkom Kenya Ltd. and therefore fail to conform to the principles of the Reference Paper. This unease will have to be tested and laid to rest after the inauguration of CCK […] The spirit of the Act is to move into an era of competition in all market sectors. Telkom Kenya Ltd. is not mentioned in the Act and therefore is a first among equals before the regulator […]. (Information Gatekeepers, 2000)

The gesture towards liberalisation is initially hollow as KPTC slows down the process of liberalisation through a selective reading of how new legislative rules can be interpreted. The appearance of alignment at the legislative level, obscures the strategies of resistance exhibited by KPTC through its discretion as the regulator of emerging and competing ICT technologies and market actors. The Act assigns the task of making appointments to the Executive, not to Parliament (Kenya Communications

Act, 1998, p 214). Africa Telecom, was right to anticipate that the discretion over appointments would have an impact (Kenyanpundit, 2006). The Office of the President chooses to staff CCK with former KPTC personnel who are often loyal to the interests of their previous institution (which were now embodied in the institution and interests of Telkom Kenya and Safaricom). The conflict of interest quickly became evident. Mureithi (2017) reflects on KPTC's intransigence and draws the commonly held conclusion that resistance to reforms is about maintaining power.

> The political system saw emerging ICTs as an affront to challenge its leaders' power and control over information flow. Such was the environment that the first efforts to introduce the Internet in Kenya, in 1995, were met with an official rebuff through a fullpage advertisement by the then Kenya Posts and Telecommunications Corporation (KP&TC), a monopoly state enterprise, declaring that Internet services amounted to resale, and were therefore illegal. (Mureithi, 2017, p 27)

Services like VOIP and internet were illegal in many parts of the world because they challenged incumbents. However, Telkom Kenya is a happy to license when it holds monopolies and to charge high prices (Mureithi, 2017).

The first full Internet service was launched by African Regional Computing Centre in the last quarter of 1995. Since then, seven more Internet service providers (ISPs) namely Africa Online, Form-Net, Inter-connect, Swift Global, Net 2000, NairobiNet, and Insight Technologies have been established. This has unleashed competition, which has brought down prices, increased the points of presence (PoP) in all major towns and generally raised Internet awareness. Additionally, KPTC is implementing a

national Internet backbone (EAFIX) for up to 30,000 customers and this is now at commissioning stage. Once implemented, 90 percent of the population will be within reach of Internet at local call rates. Kenya will therefore join other countries in Africa with nationwide availability of Internet. International connectivity is the monopoly of KPTC, which continues to price bandwidth highly. Consequently, Internet charges are extremely high. Rates now range from US$100 to US$166 per month. (Information Gatekeepers, 2000)The ICT sector was finally fully liberalised by the Kibaki government but the following excerpt from an article in the *East African Standard* newspaper, archived in the *Balancing Act*, illustrates that the entrenched institutional resistance to the process lasts well even after the change of political regime and a move towards stakeholder engagement.

> The first negative fall-out from Kenya's game of "top-job musical chairs" became apparent this week. CCK's new D-G [Director General] has shown that he retains the "protect-the-incumbent" mentality which his predecessor Kirui admitted took several years to lose. Last week industry sources indicated that CCK Director-General John Waweru was planning to restrict the provision of the popular Internet telephone service that has drastically lowered international call rates to one provider – a stance he has maintained since his days at Telkom Kenya. Waweru’s position, which stakeholders see as a reversal of the progress the telecom sector had made towards full liberalisation, sparked fresh fears that the regulator was determined to take the industry back to the days when State-owned Telkom Kenya enjoyed exclusivity in the provision of Internet services. […] The process of legalising VoIP started off last year through radical market reforms that dismantled Telkom Kenya’s monopoly of the Internet service provision. In December last year, CCK had declared VoIP legal and asked Internet Service Providers (ISP’s) to surrender their licenses for modification to allow them carry

> multimedia traffic. Licenses were then issued to Internet Backbone and Gateway Operators (IBGO) allowing them to carry VoIP in their networks. Though IBGO operators were not allowed to sell the service directly to the end users, ISPs were given a go ahead to do so. […] Until the CCK issues the amended licenses, the law bars ISPs from carrying VoIP traffic. (Balancing Act News Archive, n.d.)

The excerpt above reveals trepidation in the telecommunications sector after CCK is assigned a new Director General, who like his predecessor was employed at the former KPTC. The predecessor reportedly had a difficult time realising that the CCK is no longer expected to look after Telkom Kenya's interests. There was concern that the new Director would have to be disabused of the same outlook because he appeared to be returning to the strategy of making the regulatory landscape much more difficult for competitors. While this turns out not to be the case, it provides a glimpse of how institutionalised the instinct to protect the incumbent is.

The new regime, associated with reform, in fact does not unquestioningly embrace the free market doctrine. Telkom Kenya and its subsidiary Safaricom are privatised much later. They are not necessarily eager to relinquish government ownership of parastatals and allow the market to set the agenda. In fact, they reformist government revives government managed corporations like the Kenya Cooperative Creameries, a public sector institution that modulated the dairy industry. It had been shuttered as one of the reforms required by the structural adjustment programmes (SAPs) (Atieno and Kanyinga, 2008)T the Kibaki government demonstrates that they saw a place for public sector involvement in markets. Researchers claim that the Kibaki approach to public sector corporations is different because it does not wish to act as a monopoly

service provider but as an intermediary in the value chain, investing in infrastructure and creating pricing stability (Atieno and Kanyinga, 2008). (Ndemo, 2010; Walubengo, 2010).

> Until last week, the government was still clinging on to its shares in Safaricom Ltd, literally sitting on a jewel even as Telkom was tottering towards insolvency. It has emerged that the Kenya government only consented to selling 9 per cent of the shares in mobile telephone company Safaricom Ltd to Vodafone of the UK, after realising that it was not going to be possible to raise the billions required to resuscitate the ailing Telkom Kenya. […] Indeed, Telkom Kenya's only valuable asset at the moment is the 60 per cent stake in Safaricom. […] Kibaki's announcement last week not only signalled a major change in strategic thinking on the part of the government, but also showed that it had – at last – realised that there was more to gain in unlocking the value it owns in Safaricom shares, than in holding onto the shares of a company that has not paid it a dividend since it was established more than five years ago. (Balancing Act News Archive, n.d.)

As the excerpt above suggests, the realities of the government's financial position with respect to Telkom Kenya make it so that selling shares of companies is the only way to raise money (A. W. Munyua, 2005a). The sale of Telkom and Safaricom, then, is an outcome of economic pragmatism, rather than allegiance to the privatisation agenda. A comparison of the two regimes provide clues about the differences between their governance philosophies. Four years into the tenure of the Kibaki government a blogger reports:

> Though there is still much progress to be made, the landscape (especially from the government and regulatory perspective) is VASTLY improved and demonstrates how much progress the country can make if we had the right people in policy/decision-making positions. Some highlights from the report:

> – So far this year, ten small business process operations have been launched in Kenya.
> – Mobile operators will be required to contribute 1% of revenues to a Universal Access Communications Development Fund (which is apparently making them unhappy…I hope the government ignores them on this one and how about lowering tariffs?).
> – Sammy Kirui, who was fired from the CCK amidst wide protests, is doing a good job at Telkom Kenya and pushing aggressively into the wireless/CDMA space. I admit I was one of those people who very, very sceptical about Kirui's move and about Waweru's move to the CCK, but it seems to have worked out.
> – There are plans to revive the former KPTC telephone assembly plant and use it to manufacture mobile phones, low-costs computers etc.
> – In a case over the issuance of a competing gateway license, the Communications tribunal ruled that "the Communications Commission of Kenya (CCK) was to ignore any policy guidelines of a specific nature coming from the Ministry as the [Communications] Act was clear that CCK was to give due regard to policy guidelines of a general nature. This means that CCK independence as a regulator has been reemphasized and underlined." This is HUGE. (Kenyanpundit, 2006)

The key difference is independence of the regulator. The expectation that the tendency of the CCK to favour Telkom Kenya would be maintained is not necessarily misplaced. However, while the new regime might still believe in a strong role for government, it is less interested in a centralised paternalism. Mureithi (2017) reflects on KPTC's intransigence during the Moi years and draws the commonly held links between resistance to reforms and maintaining power.

> The political system saw emerging ICTs as an affront to challenge its leaders' power and control over information flow. Such was the environment that the first efforts to introduce the Internet in Kenya, in 1995, were met with an official rebuff through a fullpage advertisement by the then Kenya Posts and

> Telecommunications Corporation (KP&TC), a monopoly state enterprise, declaring that Internet services amounted to resale, and were therefore illegal. (Mureithi, 2017, p 27)

The Moi government's interested in power, however, does not preclude it from also resisting market reform because of its communalist ideology. The report card on policies of the Washington Consensus is mixed (Atieno and Kanyinga, 2008; Cheeseman et al., 2019). In critical social theory discourses where social welfare rather than economic growth is regarded as the benchmark, they receive a resoundingly negative evaluation (Chomsky, 1998; Escobar, 1995; Herbst, 1990; Lall, 1995; Neveling, 2017; Riddell, 1992). Apart from decreasing welfare, they are seen by anti-globalisation theorists as an attempt to exploit the developing country labour markets at the expense of workers everywhere (Chomsky, 1998; Van Der Hoeven and Saget, 2004). The sentiments expressed in Silicon Savannah at the time of my ethnography, however, are that liberalisation of the telecoms market and demise of the public sector telecommunications corporation was beneficial. This is indicated in the Twitter exchange below:

> If we never allowed KPTC to die, Safaricom would never have been (Hersi, 2014)
> [Response]: We, Economists, call it Creative Destruction (Sambu, 2014)

4.3 KICTANet and Virtual Global Consensus on Internet Governance

The change in regime changes the environment and the discourse of telecommunications in Kenya. The preceding sections of this chapter dwell on the recalcitrant state under President Moi and its interactions with the developmental

configuration. This section switches attention to the interaction between a different set of actor—a multi-stakeholder ICT advocacy organisation—and a global progress regime that has softened its approach to global governance. This organisation is an important shaper of the ideological underpinnings of Silicon Valley, but the analysis here is of how colonial relationality is evident even in consensual dynamics. A post-Washington Consensus context is one in which global policy approaches have shifted away from market fundamentalism and from enforcing compliance to building consensus (Thompson, 2011). In the example presented here, the legitimacy of the so-called multistakeholder process is, nevertheless, dependent on strategic alignment with an espousal of particular perspectives on ICTs and development. The consensus-building approach still constrains actors at the local level to a particular narrative infrastructure of progress.

> The concept of multi-stakeholderism is grounded upon the increasing recognition and acceptance that it is useful to divide organizations into three key types or sectors: governments, the private sector, and civil society. Each of these groupings contributes in specific and different ways to debates over the delivery of ICT initiatives. They all have different interests. All too often, though, these concepts, and indeed the notion of multi-stakeholderism itself, are taken for granted, with their meanings being insufficiently dissected and discussed (Unwin, 2017, p 72).

It is because of efforts at building consensus that the Kenya Information and Communications Action Network (KICTANet) is established. It is to represent a 'holistic' Kenyan perspective on matters of global ICT governance.

Embedded power geometries are in evidence in how this role is assigned. At the level of the international institutions, influential actors had concluded that:

> It is becoming increasingly clear that no one sector can deliver the complexities of development alone as a result the structure of decision making processes is changing provoked by ICTs, globalization and other factors that are influencing the nature of traditionally governed national, regional as well as international institutions. The concept of "sovereignty" is therefore changing and the monopoly of the state as the sole decision making organ is becoming increasingly challenged even in African countries. Newly emerging partnerships between private sector, non-governmental organizations and media groups have prompted the need to identify and adopt new decision making processes, which aim to bring together all major stakeholders in a new form of decision finding, decision making and communication over a particular issue (Hemmati, 2012).

The element of a reduced role for the state runs through this approach. There is a feeling that a third sector better represents the interests of ordinary people . The role of the third sector is indicative of a sense that can be antagonistic towards their polities. As has been reiterated here, the view that the African state operates on this modality is particularly and problematically taken for granted (Hansen and Stepputat, 2001; Mkandawire, 2015; Sabaratnam, 2017). It means that de national sovereignty is largely secondary to the aims of the developmental configuration if those nations do not share a similar outlook (Thompson, 2011). Rationales for intervention are morally justifiable on the basis that they are mechanisms for humanitarianism and extending freedoms like democracy to marginalised actors Third sector actors in developing countries are often seen as better representatives of local perspectives, however, what Joyce Nyairo (2015) refers to as 'NGOisms' and others have analysed as a professionalised 'aid

industry' (Mosse, 2005; Mosse and Lewis, 2005; Neveling, 2017; Sabaratnam, 2017; Shakya, 2017) reveals that many of these organisations become interested in being topart of a mutual legitimation infrastructure that upholds the perspectives of the developmental configuration (Unwin, 2017, p. 78).The professionals that participate in these policy realms become members of the development configuration through educational qualifications and work experience (Carver, 2010; Gikandi, 2001; Harvey, 2006; C. Katz, 2004; Watson, 2014).

Virtual Networks

The KICTANet electronic mailing list is established in April 2005; months before the World Summit of the Information Society (WSIS) (Etta, 2005; A. W. Munyua, 2005a, 2005a). The list consists of people who are professionally interested in ICTs in Kenya, either because that's their role in government, work in civil society organisations that advocate for ICTs or for private sector ICT entities. From the emails it is evident that many of them have interacted with one another in other fora and through other networks. KICTANet is a new entity that brings them together as 'multistakeholders'. KICTANet is in fact a product of CATIA (Catalysing Access to ICTs in Africa) a programme of DFID, the UK Overseas Development Agency (A. W. Munyua, 2005b; Munyua, 2006; Walubengo, 2005). The Association for Progressive Communications (APC), an international organisation and network established in the 1990s to facilitate the provision of ICTs to civil society organisations around the world, is the lead organisation (A. W. Munyua, 2005a; Munyua, 2016).

> The APC CATIA project in Kenya begun with identification of relevant stakeholder groups, which were defined using the WSIS pre-defined process (A. W. Munyua, 2005b).

There is real interest in reducing poverty through ICTs and integrated marginalised voices and global for a, and the CATIA project aims to do this.

WSIS, an initiative of the United Nations, had been set up to establish global ground rules and create institutions for the operation of the Internet and related technologies (Unwin, 2017; Wanjira-Munyua, 2005). The first WSIS summit that had taken place in 2003 had been contentious (Unwin, 2017). The USA wanted to retain control of regulating the Internet, which would have included the ability to determine and oversee its monetisation(Muthoni, 2005; Unwin, 2017; Wanjira-Munyua, 2005). The rest of the world, it seems, wanted to create an information society governed by the principles of net neutrality and internet freedom (Gachungi, 2015; Otieno, 2015a). The lack of consensus at the 2003 WSIS meant that the matter was tabled until a 2005 meeting. As the 2005 WSIS loomed, the APC began a process of building global consensus around a vision for the global information society (Etta, 2005; A. Munyua, 2005). The APC had UN consultative status and after the 2003 WSIS, the APC had ramped up its efforts to create an alliance of organisations around the world that were mobilised around their agenda for net neutrality.

The KICTANet mailing list itself represents the value of digital connectivity to organising collective action. When the WSIS was held in 2005, APC is able claim that it has built global consensus around a set of ideas and could speak on behalf of an

international network of advocacy groups (apc.org, 2005a; Munyua, 2006). One reading of the APC process of building this network would fit an analysis of power in the so-called “consensual tradition” (Haugaard, 2008, p 119) but it also, resonates with this research’s reading of global relations as shaped by persistent hegemony. There is a difference between including new actors into a structure and including actors in the design of that structure. That actors are ‘marginalised’ from the global system an issue, but the larger problem of coloniality is that there is a global system that a) is constructed with a EuroAmerican view of progress in mind and b) in order to participate actors have to conform with its modalities. A critiques of the third sector actors from developing countries who participate in fora like WSIS and IGF is that they are often local elites (Unwin, 2017, p 79). Often there is often no interrogation of this that might reveal that only local elites could possibly participate in these fora. The process of becoming familiar with the norms and arguments of these arenas necessitates the transformation into a cosmopolitan elite (Maldonado-Torres, 2008; Mignolo, 2017; Rao, 2010).

The 2005 WSIS discussions, are much less so, as a result of all the APCs preceding efforts. They also produce another mechanism the Internet Governance Forum (IGF) which is intended to be representative of civil society and pro-poor positions (Unwin 2017). The APC declared that the global consensus was that institutional oversight of the internet could remain in the hands of Internet Corporation for Assigned Names and Numbers (ICANN) in the US but that it should remain a non-profit whose aims were consistent with the principle of net neutrality (apc.org, 2005a). KICTANet backed the

APC position yet APC's representative in Kenya, Alice Munyua's, own analysis is that there was a lack of awareness about what was at stake at those meetings (A. W. Munyua, 2005b; Munyua, 2016, 2006) and what ICANN oversight represented. Nevertheless, APC is able to derive power and legitimacy from the collective, despite actors not being knowledgeable about the decision-making environment (Hussein, 2015c; Wanjiku, 2011). Instruments for building consensus, can appear to accommodate all manner of heterogeneous standpoints and disparate expectations. They appear to confer agency, yet the mere fact that they can, paradoxically means that the agency is precarious and dependent (Katz, 2004). APC and other agencies offered training and information sessions to stakeholders in order to educate them on internet governance regimes, but what constituted important knowledge and correct decisions is already decided (apc.org, 2005b). Years later, we see KICTANet members beginning to debate whether net neutrality is indeed favourable to the Kenyan context (Gachungi, 2015; Hussein, 2015d; Karanja, 2015a; Otieno, 2015a). Some members of KICTANet blame the information asymmetry on the lack of delegates' lack of research:

> […] someone who had flown over 10,000 miles to Brazil [to the Internet Governance Forum] yet claimed Africans (the generality) should be included in the discussion. I don't think nobody ever blocked someone off from participating in the pre-IGF events and surely, playing that racism/underdeveloped/Africa/Poverty card is so lame. Unless we conduct our research, we will continue being consumers of knowledge, or whatever is presented as such. (Karanja, 2015b)

This kind of argument is often made by those working under a framework where power geometry/coloniality does not function as a structuring force of these processes and organisations.

Can there be consensus in conditions of power asymmetry?

Hearn (2012) distinguishes domination from power by describing domination as a relationship and power as a capacity (p 20). Power can have negative and positive effects. The issue is not for instance, that the APC has derived power from appearing to represent a wide cohort of actors. However, in doing so it illustrates that mutual legitimation can be one-sided, when actors are coerced or incentivised to agree. Domination that robs actors of agency, no matter its intended benevolence, should be characterised in those terms. In later years, KICTANet members' debate on net neutrality is revived when Facebook introduces 'Free Basics' a service which provides Facebook and other social media platforms free to all mobile phone users in developing countries (Githaiga, 2015a; Hussein, 2015e; Karanja, 2015c). This violates the principle of net neutrality because it gives preference to certain content. Those who supported Free Basics see it as a means of including poor or low income people in Internet Society:

> Dear Listers, Greetings. I hope your week has started well. The topic of Net Neutrality has become an important global Internet Governance issue in the last two years, and has generated some interesting debates. In Kenya, Facebook has partnered with Airtel to offer users zero rated services, christened "free basics" which means that several websites have been selected (for lack of a proper word)

> to participate in the platform, where users access these websites for free. However, the same users cannot access any other website unless they pay for the data. Different positions depending on where their proponents stand have been shared. […] Those for pro zero rated services have argued that it gives more users free access to the Internet, and that it is a genuine attempt to connect the unconnected. Those on the opposite side argue that zero rating stifles innovation, leads to customers lock-in, is anti-competitive behavior, confuses the users on the true meaning of the Internet, denies users choice, and makes policy makers lazy in ensuring proper affordable internet is availed to the masses. Facebook's Head of Public Policy, Africa Ebele Okobi, and the Public Policy Manager, Africa Akua Gwekye have graciously agreed to respond to any queries the community has on zero rated services. Please articulate your concerns and ask questions as we usually do when we have moderated debates. The facebook team will then look at the questions and respond to you on Wednesday Evening. Depending on how it goes, we can then see how to continue engaging with them. (Githaiga, 2015a)

The Facebook team are introduced into the discussion through a dedicated email chain, and it clear that there are those we began to see the idea of net neutrality, which they had presumed to rest on the principles of inclusion and internet ubiquity as a fundamentally capitalist market acquisition strategy (Kivuva, 2015b; Sambuli, 2015).

The Net Neutrality debate we are having is quite limited. The focus on Free Basics is very much in order and I hope this kind of energy can go to other contentious NN issues like protocol and peering discrimination (like when Zuku caps your download speeds when you are downloading Game of Thrones from Pirate Sites or when streaming live matches) and IP discrimination (when coffee joints, universities or organizations block specific websites like YouTube, Facebook under the guise of productivity, obscenity or heavy-traffic balance). These are top-of the head examples.

(Karanja, 2015b)Be it the goal of transferring technology, bridging the digital divide, or increasing educational attainment in order to improve a locales ability to produce technoscience, inclusion generally refers to widening participation within the limited scope of how innovation and development are currently imagined. The call for inclusion can be a Trojan horse for modernisation and incorporation into global consumption and commodification patterns (Díaz Andrade and Urquhart, 2012). The changes in perspective that occurred as KICTANet members became more knowledgeable about the ideas and processes that they had been party to illustrates that there cannot be consensus in conditions of information asymmetry. In fact, as a result of these increasing suspicions, there was an interest from some civil society actors in the placing the Internet under government jurisdiction (Gideon, 2012; Ndaro, 2012).

Theorists who works in the consensual tradition are often criticised for being ahistorical (Ascione, 2016) because they appear to ignore that some actors have no choice but to accept the legitimacy of the discretion that other actors have over their actions. The delegates in question had not been involved in the establishment of the system for internet governance and its institutions, they were co-opted into an existing framework and no ability to restructure it. There only choice was to align with one of the established positions. This is an allegory for the world system and development practice, at large. The manner of KICTANet inclusion into the WSIS process on the one hand is an ideal case of how power and legitimacy can be accrued through

collective action and association. From another vantage point it illustrates how consent can be manufactured (Ali, 2015; Bourdieu and Wacquant, 1999; Burawoy, 1979).

According to Barnes (1988) actors can collectively consent to asymmetrical relations and the establishment of authority over them. "Powers are specified in terms of particular norms and accepted because they are so specified" (Barnes, 1988, p 25). Therefore, under certain normative conditions it is a form of agency to choose to be subject to a particular authority. This, however, has to occur under conditions of perfect knowledge and a lack of information asymmetry (Barnes, 1988). The close inspection of interaction between the local and the global regimes reveals inherent power gradients. Power gradients that are often accompanied by information gradients, and for this reason constrain agency. The APC claimed that it had built consensus around a set ideas (Wanjira-Munyua, 2005). Yet KICTANet actors had a steep learning curve and any authority they ascribe to the WSIS process is precarious (Etta, 2005; Walubengo, 2005; Wanjira-Munyua, 2005).

4.4 Developmental Doctrines and their Impact on National Sociotechnical Imaginaries

The asymmetries of the global political economy mean that only international conglomerates based in Euro-America have the financial wherewithal to take over the state monopolies after their privatisation. In this way, the entanglement of developmentalism, as represented by the Bretton Woods organisations, with capitalism is made visible. The underlying principle that development translates into

appropriating Western socio-economic approaches, is durable (Ndlovu-Gatsheni, 2018; Shakya, 2017). It is an idea whose longevity and has persisted for several centuries (Ndlovu-Gatsheni, 2018; Wallerstein, 1989, 1980, 1974), one that does not seem to be undermined by objection or critique. After liberalisation, National sociotechnical imaginaries have to include global conglomerates. A continuity between the colonial era and the post-colonial is harboured in the rationales for liberalisation that bring about global patterns of extraction that are reminiscent of colonial commerce (Gikandi, 2001; Mbembe, 2001b, 2016a; Ndlovu-Gatsheni, 2018).

Despite the overall negative effects of liberalisation, it is certainly the first step towards the existence of Silicon Savannah. In fact, Silicon Savannah's narrative continues to be closely associated with market reforms and subverting a neopatrimonial state. In a 2006 blogpost a Silicon Savannah entrepreneur correlates the heightened business activity and optimism brought on by the introduction of mobile phones with their ability to help circumvent government restrictions and corruption:

> Riddle me this though: why was their an upsurge in entrepreneurship, business and optimism in Kenya when mobile phones were made available for the first time in the 1990's? My answer is that they circumvented the government monopoly on communications and virtually cut off a whole bribery channel. Sure, there were still costs involved, but because there was competition among non-government run competitors for the first time in the communications industry, ordinary Kenyans could finally communicate. Sidestep the government "rot" using technology and the free market. Be relentlessly optimistic. Break the cycle. [Blog, Hersman, 2006]

This is a narrative constructed to fit the author's belief in technological solutionism and the primacy of the market. In fact, in the nineties, owning a mobile phone did not enable you to 'circumvent the government monopoly on communications'. No matter which of the two mobile phone service providers one used, government monopolies owned and licensed the use of the infrastructure until around 2003 (Interview, former employee of Internet Service Provider; Balancing Act News Archive, n.d.). It is also illustrative of the tendency to associate economic decline in Africa with the state (Gagliardone, 2016; Grosfoguel, 1996; Hansen and Stepputat, 2001; Mkandawire, 2015). The entrepreneurs who are the subjects of my ethnography and I, as their observer, are exposed to the narrative of Africa's neopatrimonial states. In fact er have internalised it. In part, likely because it is a narrative that reformists in the political arena use to make a case for regime change. The Moi government's philosophical opposition to these interventions is understood then, and now not as an alternative approach to development, but the wrong approach to development. Mkandawire (2015) outlines the theories that are deployed to explain these links:

> Three arguments have been advanced against the anticapitalist posture of neopatrimonialist states. The first simply involves authoritarian regimes' fear of the emergence of any alternative sources of power. The argument is that acting on such fears thwarts the emergence of a national bourgeoisie. […]This fear also blunts the spirit of emergent capitalists as potentially productive elites are drawn into a web of neopatrimonial strategies where they respond to "perverse incentives" that undermine productive activities. Privatization, which should spur the emergence of a capitalist class, has been slowed by neopatrimonial logic as the big men and their clients acquire assets through corrupt means rather than transparent and competitive processes. A second argument is that the

> redistributive bias of neopatrimonialism undermines the social differentiation essential to capitalist develop-ment and that the neopatrimonialist system would collapse if the full force of capitalism was allowed break up the moral ties and networks that nourish it. The third argument is that neopatrimonialism does not provide an institutional framework within which capitalism can flourish. with its preference for relationship-based transactions, neopatrimonialism has not been able to provide the bureaucratic order and predictability that investors need to engage in long-term investment. it undermines institutions that ensure property rights and thus increases uncertainty through its arbitrariness. (p 576)

As post-independence economic growth stagnates and debts deepen[8], the Third World's objection to the structure of the global economy is replaced by the neopatrimonial self-critique (Grosfoguel, 1996). A critique that emerges from awareness that in countries like Kenya public sector organisations are being used to enrich local political elites and associating the wealth of EuroAmerica with 'better' moral economies where such behaviour would be punished. When the banks condition their lending on government reforms which included ending grand corruption, democratising the political regime and liberalising markets, it feels just. In fact, one

[8] While, the world had experienced economic decline in the seventies, Kenya and other Eastern Africa nations had faced a severe drought in the early eighties which had led to heavy borrowing (Hornsby, 2012, p 421).

outcome of deregulation and globalisation is placing local livelihoods in jeopardy and reinforcing asymmetrical global dynamics (Sabaratnam, 2017; Zeleza, 2009).

Castells concludes that the SAPs rendered Africa structurally irrelevant in global matters.

> Yet what can be said of the experience of the transition of Africa into the new global economy is that structural irrelevance (from the systems point of view) is a more threatening condition than dependency. Such structural irrelevance was revealed when policies of adjustment were imposed on Africa during the 1980s, in the wake of the debt crisis, applying abstract formulae to specific historical conditions: under the dominance of free market conditions, internationally and domestically, most of Africa ceased to exist as an economically viable entity in the informational/global economy. (Castells 1996, p 135-136)

In a report co-written by authors representing some of the world's most well-known development economists, *Development Economics through the Decades: A Critical Look at 30 Years of the World Development Report* (2009), the authors indicate that their economic models and abstract formulae did not predict the negative effects of the structural adjustment programmes.

> […] after running 2 million regressions, Sala-i-Martin (1997, 2002: 19) confesses that "we have learned a lot about growth in the last few years. However, we still do not seem to understand why Africa turned to have such a dismal growth performance . . . Understanding the underlying reasons for this gargantuan failure is the most important question the economics profession faces as we enter the new century (Yusuf et al., 2009, p 52)

Despite the gaps in knowledge discussed in the excerpt, a complete overhaul of the relevant discourses is not forthcoming (Ravindran, 2019). Instead, slight are seen as alternatives. Even though the neoliberal doctrine of the eighties and the nineties is thought to have been countered by processes for developing global consensus and multistakholderism.

> Reagan's and Thatcher's policies were decisive in breaking the ideological ground for this to happen. But the 1990s were the moment when the new rules of the game diffused around the world. The Clinton administration and the International Monetary Fund, (strongly influenced by the US Treasury), were decisive in fostering globalization, by imposing policies to reluctant countries, threatened with exclusion from the new, dynamic economy. (Carnoy and Castells, 2001, p 5)

The retreat from market fundamentalism does not mean an end to capitalist globalisation and intervention—rather, a new approach makes room for an emphasis on inclusion. Thus, the changes do not represent a radically new economic doctrine, rather it is a softening of the approach to neoliberal universalism (Bourdieu and Wacquant, 1999; Harvey, 2006; Massey, 1993; Neveling, 2017; Shakya, 2017).

5 MATERIALISING NATIONAL SOCIOTECHNICAL VISIONS

The new government formed after a historic election that replaces President Moi with President Mwai Kibaki is preoccupied with reversing Kenya's economic decline through industrialisation (Government of Kenya, 2007, 2013; Kivuva, 2015a; Muraya, 2014; Walubengo, 2006a). It believes that an ICT sector suits Kenya's attributes and hopes, in particular, that global multinational corporations will see Kenya as place to locate an information technology-enabled services (ITES) business process outsourcing (BPO) industry. ITES-BPO is an outsourcing model that uses information technology typically over the Internet, in the delivery of the outsourced process. The investments that the government makes are predicated on materialising this vision. If we apply the language of arenas of expectation, Kenya is one of many ITES-BPO enactors with multinational corporations acting as the selectors. It is therefore up to Kenya to create and convey the right expectations about its capabilities.

This chapter illustrates how actors attempt to make their visions material in institutions and infrastructures. Physical infrastructure, while serving its intended role is also an embodiment of hopes, politics and contestations:

> […] infrastructures not simply as technological networks that enable people to access new forms of circulation—of people, goods, and ideas—but as political and poetic objects that generate debates and anxieties about the merits and moralities of these new circulations (Park, 2017, p 13).

The new regime, in what is cast as the first government change over in the history of multiparty governance, also wants to live up to an image as a reformist government and demonstrate a commitment to governing transparently and by building consensus. Thus, the national vision for ICT sector development emerges from the hopes held by a myriad of actors. The excerpt below references the government's Vision 2030 which is its core planning document.

The Vision was consultative and inclusive stakeholders' process carried out between October 2006 and May 2007. Specifically, the process involved international and local experts, ordinary Kenyans and stakeholders from all parts of the country. Between July and August 2007, the contents of the Vision 2030 were again subjected to open consultations in all districts in Kenya, before the finalization of the document.(Government of Kenya, 2007)The construction of national sociotechnical imaginary is a shared project. Civil society organisations view development as hinging on poverty eradication, and see ICTs as valuable tools for that fight (Adera and May, 2011; Adera et al., 2014; apc.org, 2005c; Muthaura, 2013). For yet another set of actors, entrepreneurship and the potential to profit from the digital economy is the vision that drives their designs on the ICT arena (Githaiga, 2015b; Ikua, 2015; Mulupi, 2013). While a cursory view of these dynamics might suggest that a shared expectation about the benefits of ICTs would unify these disparate groups, this research reveals contestation over the vision, which under the reform agenda requires multistakeholder engagement.

All this activity is shaped and constrained by the neoliberal framework for economic development which has become the global status quo. One that is enforced through the existing global system. One difference between this chapter's time period and the last is the is the growing ubiquity of digital technology in Kenya, and around the world. ICTs have the effect that shipping must have once had on the global socioeconomic arrangements (Wallerstein, 2004, 1980). Mbembe's (2015) definition of neoliberalism is "a phase in the history of humanity dominated by the industries of the Silicon Valley and digital technology." (p 3). According to Castells and Carnoy (2001):

> a global economy is a new reality, different from processes of internationalization in previous times, for one simple reason: only at this point in history was a technological infrastructure available to make it possible. This infrastructure includes networked computer systems, advanced telecommunications, information-based technology, fast transportation systems for people, goods and services, with a planetary reach, and the information processing capacity to manage the complexity of the whole system. True, most firms and most jobs in the world are not global, in fact they are local and regional. But most, if not all, economies are dependent upon their performance of their globalized core […] Globalization could only proceed because of the new technological paradigm that developed from the 1970s onwards, on the basis of the revolution in information and communication technologies. But technology was not the cause, only the medium. (p 3).

The Kibaki government is sure that it can marshal ICTs to reach a higher stage of development, but it is almost necessary to have this view in this day and age.

> […] for most states in the world, the more countries that were added to this global network of streamlined capitalism, the fewer the chances of economic survival for countries left out of the network. Second, the unification of economies in large areas of the world, such as the European Union, homogenize economic policies by making them increasingly dependent on the free movement of capital, goods, and services, which follow the rules of profit-making on a global scale. Third, the United States, and the G-7 group, developed an institutional framework to impose the respect for strict market rules around the world: the International Monetary Fund, World Bank, and the World Trade Organization were strengthened in their role as watchdogs of the global economy (Carnoy and Castells, 2001, p 6).

5.1 ICT for Industrialisation

Under the governance of the Kibaki regime, Kenya's goal is to industrialise, and increase citizen's wellbeing through integration into the global economy.

> The aim of Kenya Vision 2030 is "the globally competitive and prosperous country with a high quality of life by 2030." It aims at transforming Kenya into "a newly-industrialising, middle income country providing a high quality of life to all its citizens in a clean and secure environment". In other words the vision aspires to meet the MDGs for Kenyans. (Government of Kenya, 2007, p vii)

The popular economic development paradigm characterises development as occurring in stages. Economies and factors of production progress from reliance on raw materials, manual or machine labour, to ideas and innovation. The second step after a reliance on primary production, is industrialisation exemplified by the existence of manufacturing industries (Barro and Sala-i-Martin, 2004; Porter, 1990a; Rostow, 1990; Sala-i-Martin et al., 2011). The government tends to ascribe traditional attributes

of manufacturing industries to the ICT sector—large scale employment of a labour force, and localisation within a 'zone' (Konza City).

In the present time, the normative policy position is that a technoscientific knowledge economy is the zenith of economic development (Banya, 2008; Moisio, 2019; Rostow, 1990; Srinivasan et al., 2014). ICTs generally fall into this category but ITES-BPO basically refers to call centre companies—the labour is not manual, but it does not resonate with the imaginary of the knowledge worker and an arena of development. While it may not yet be aspiring to innovation economy status, and science and technology are seen by the state as facilitating the aim to industrialise (Kagai, 2006).

> Science, engineering and technology underpin everything we're trying to do around Kenya's Vision 2030 (KenyaVision2030, 2011)

Knowledge that is deemed scientific is often privileged over local ways of knowing, which are often categorised as cultural and traditional.

Vision 2030 proposes intensified application of science, technology and innovation to raise productivity and efficiency levels across the three pillars. It recognises the critical role played by research and development (R&D) in accelerating economic development in all the newly industrialising countries of the world. The Government will create the STI policy framework to support Vision 2030. More resources will be devoted to scientific research, technical capabilities of the workforce, and in raising the quality of teaching mathematics, science and technology in schools, polytechnics and universities. (Government of Kenya, 2007, p ix)Economic development has not

always been viewed as occurring in stages. At one point primary production and industrialisation are seen as alternatives.

> […] here remains a wide margin of disagreement between the advocates of international specialization and investment in primary production on the one hand and the proponents of "balanced growth" and industrialization on the other. Most of the participants in this controversy would probably accept the proposition that the primary aim of a developing country is to secure the greatest increase in its income (total or per capita) from its available resources in the long run. The main problem lies in evaluating the amount of scarce resources which will actually be required by alternative types of production (Chenery, 1955, p 40)

STS scholarship has demonstrated the inaccuracy of these linear frameworks of development (Tait and Williams, 1999). Modernisation theory has also been sufficiently critiqued in the development discourse (Meinhof, 2018; Mkandawire, 2015; Moore, 2001), however, these ideas persist in popular and policy frameworks that link progress with the trajectory of affluent nations, which are primarily Western or seen to have successfully Westernised.

The Konza technopolis business process outsourcing (BPO) concept is informed by Etzkovitz and Leydesdorff's triple helix framework (Ikua, 2015). It's theory links universities and industry and is the blueprint for tech parks and university incubators around the world (Etzkowitz and Leydesdorff, 1995). Respondents' frequently reference Etzkowitz and Leydesdorff's "triple helix" framework and its analysis of the development of technoscience industry clusters around Stanford and Harvard universities..

> @iHub On Sat, we host this month's Entrepreneur's Forum to discuss the triple helix & innovation. [Twitter]

While triple helix is a knowledge/innovation economy discourse, it is clear about a role for government, and advocates for government to incentivise the interaction of industry and universities (Githaiga, 2015b; Hussein, 2015f; Njihia, 2016; Otieno, 2015b).

While the Kibaki government has appropriated the linear telos of progress, it resists a view that limits the role of government. In fact, it revives the national institutions in the agricultural sector that were made defunct by structural adjustment programmes which characterised them as symbols of patrimony and sites of corruption (Atieno and Kanyinga, 2008). The perspective of the Kibaki government is that post-colonial places are fully capable of modernity. Its aspirations are based on the perspective that an educated populace is well capable of developing a competitive, globally integrated economy. Park (2017)

> “these aspirations have turned on a dialectical vision of the relationship between technology and society, a vision premised on the conviction that as technologies were rescaled they could, in turn, reconfigure and rescale people’s subjectivities” (p 9).

This doctrine is indicated in a lower appetite for Bretton Woods’ low-interest loans and choosing to finance government projects through more efficient tax collection (Cheru, 2016; “NATIONAL ASSEMBLY OFFICIAL REPORT Ninth Parliament - Fifth Session,” 2006) . It also implements a policy to modernise the polity through

education—instituting free primary school education but rejecting pressure from the development configuration to frame its education policy around poverty reduction, preferring the vision of ' industrialisation' (King, 2006, p 32).

> The Government of Kenya considers the attainment of UPE [universal primary education] as a development strategy. It is well understood that a literate population is key to the overall development of the nation (Government of Kenya, 2005; *Kenya National Assembly Official Record (Hansard)*, 2003).

The then permanent secretary for ICT, Dr. Bitange Ndemo was (and is now) an associate professor of industrial economics at the University of Nairobi when he was tapped for the position as the Permanent Secretary for ICTs (the head civil servant who answers to the Minister). Dr. Ndemo's industrial economist background is reflected in the frameworks and exemplars from which he draws inspiration. He felt that Kenya could generate the necessary momentum for 'catch up' by adopting the Triple Helix methodology of Estokovitz & Leydesdorff (1995). The plan was to co-locate a university and Information Technology Enabled Services-Business Process Outsourcing (ITES-BPO) companies in an area sixty kilometres from Nairobi. Dr. Ndemo indicated that he was inspired by Bangalore's outsourcing industry, which was the inspiration for making ITES-BPO Konza's anchor industry.

ICTs are an aspect of the knowledge economy, a discourse currently idealised in global economic development policy (Moisio, 2019). The 'knowledge' in question is technoscientific knowledge.

> ICT and software industry in particular is one of the remaining escape routes that Kenya has, to liberate its people from their economic and social quagmire. Perhaps one only needs to invoke the stereotypical example of the MPESA success to dare the common pessimistic to shrug off the defeatist '*that is too ambitious*' attitude. […] We need not arrange an economic management seminar with Michael Porter to learn that a nation can develop competitive advantages around the skills of its people. Besides in our knowledge economy, traditional factors of production such as land and capital are belittled by the very knowledge-base of a people. (Kieti, 2009)

The blog excerpt also mentions competitive advantage, which links individual expertise to national development. The narrative infrastructure of the knowledge economy is that it is achievable, developing countries can 'leapfrog' into technoscience based economies and bypass other stages of development. Individuals can increase their incomes and grow businesses with very few inputs. The Kibaki regime appropriates the discourses of ICTs and technoscientific development in ways that resonate with its own views of national development. Namely, government is a key facilitator of modernisation and industrialisation. When the Moi government had this outlook, it is critiqued as neopatrimonial.

The government also has faith in the ability of the local environment to produce endogenous innovation. It, however, continues to rely on knowledge economy methodologies like triple helix. This is evident in its sociotechninical aspirations for public universities. Universities are the third strand in the triple helix. Through the recollections of a former university materials scientist who leaves the university to

become a technology entrepreneur we find out that the government is interested in innovation lands and university science parks:

> So at some point I was exposed to stuff that was happening at MIT when I went there for a conference in 2002 on Development by Design and visited the Media Lab. And I learned about the digital fabrication machines and so on and a little later they started the FabLab network and you know, setting up small labs with digital fabrication machines worth about 100,000 dollars, if that. And so I basically wrote a proposal to the government to buy one for the university […] the government bought the FabLab for the university. Actually that is an interesting point because one of the conditions for their buying was that we should then set up FabLabs in many of the middle level colleges, not universities necessarily and the polytechnics and so on. [….]So we were supposed to now create the model by which we train the people at the colleges to have their own FabLab and help them take off. It never happened but that is how it started. [Interview, former university lecturer, now manager of Hub]

The lecturer, a materials scientist, had obtained the funds by aligning the project with the long-term vision for a Science Park to be set on 600 acres of University of Nairobi property. The funding for this never arrives, however:

> Science Park is the name park implies, it is a real estate development so there was a proposal to set up labs and incubation space and all that that entails on land that the university owns. But we never really got the funding so the FabLab became the scene of the Science Park and the idea was to demonstrate that there were actually developments within research in the university that can become products. And so then it would be easier to attract funding for the bigger developments.

A different academic, who manages to secure funding from the government funded University of Nairobi to set up an incubator for computing projects sees the priorities shift from an informatics research lab to evoking the innovation hub imaginary.

> Incubation and acceleration was not the priority of C4D when we started. The priority was basically R&D and strategic thinking about research. But six months down the road, a month down the road, the acceleration and incubation became a flagship program of C4D. So the priority seemingly shifted towards acceleration.. And I understand , it is because you are going to create new companies, because the Vice-Chancellor thinks more about the students, because that is the primary client, you know, I need to support the students so that they can create jobs, so there was an emotional connection towards that. And so more priority went to that.

It is worth noting that the University of Nairobi, is a public institution is subject to the government's policy agenda. The government was establishing infrastructures for supporting industrialisation led by ICTs. Like all investments, the government's financing of ICT infrastructure is based on a speculative vision of the potential outcomes (Mureithi, 2009a; Otwoma, 2009). Academic and economic policy discourse on clustering (Cooke, 2001; Engel, 2015; Porter, 1998), government-industry coupling (Ghosh and Chandrasekhar, 2009; Vang and Asheim, 2006) suggest that materialising arenas of industrial development is the ideal strategy for economic development. ITES-BPO is expected not only to attract more established companies but to also create an environment that produces new, locally apt digital technologies, otherwise known as an arena of development.

5.2 'Build it and they will come': Global Competitiveness in an Asymmetric World Economy

The concept of national 'competitive advantage' is also important to the Kibaki government's action plans. Members of the government, view ITES-BPO as an area of potential competitive advantage and therefore economic development. The reality that this is a plan for integration into the global economy and global integration is not necessarily a boon for the development of a local arena of development.

According to the global competitiveness framework, countries develop particular economic sectors because of attributes that are specific to them (Porter, 1990b, 2003). Each country should, therefore, endeavour to develop its areas of competitive advantage rather than mimic the success of other countries (Heeks, 2007; Nicoline Ondari-Okemwa, 2011; Porter, 1990b, 2003). Vision 2030 is built on this premise, and its pillars reveal what the government believes to Kenya's areas of competitive advantage.

> After a comprehensive analysis of Kenya's global competitiveness, six key sectors have been identified to deliver the 10 per cent economic growth rate per annum envisaged under the economic pillar: tourism; agriculture; manufacturing; wholesale and retail trade; business process outsourcing (BPO); and financial services. (Government of Kenya, 2007, p x)

ICT is one of these areas because of the expectations that the government has about the local labour force and its compatibility with BPO. Specifically, that there is a supply of a well-educated educated young people, with a good command of English.

> The ICT sector is one of the fastest growing sectors of the economy, with highest potential for Kenya's prospects in tapping global markets. […] we are investing in fibre optic connectivity nationally and internationally to leverage our global competitiveness in this sector, which offers our educated youth extensive opportunities for employment. Therefore, the strategies that you are developing for the next five years should leverage this competitive advantage, especially with regard to business process outsourcing, which is the world's fastest growing global market. (Kibaki, 2006)[9]

Other policy documents also reflect this emphasis on ICTs and global competitiveness (Government of Kenya, 2013, 2007; Ministry of Information, Communications and Technology, Republic of Kenya, 2014; Wanjiku, 2008). Not in the localised framing, nor in the international discourses from which it emerges, is there a sense of awareness that the affluence of some places is dependent on the exploitation of others.

This vision of an ICT sector anchored by global BPO companies materialises particular ICT infrastructures—fibre optic undersea cabling infrastructure and another key piece of the vision is Konza technopolis, a technology park which would be the site of the ITES-BPO.

> During his inauguration at Uhuru Park on December 30, 2002, Kibaki had labelled Moi's regime the "twenty-four wasted years". He committed himself to a

[9] Excerpt of president's speech in Mombasa at the occasion of the landing of the undersea fibre optic cable, shared in KICTANet email, October 31, 2006

> reawakening of the economy. Enter the magic words "Vision 2030" and the dazzling promise of a whole new techno capital Konza City. (Nyairo, 2015, p 49)

Konza technopolis would be a material representation of the triple helix theory in which universities and industry were coupled through government incentives in order to produce innovations that accelerated economic development (Etzkowitz and Leydesdorff, 1995). The business processing outsourcing (BPO) technopolis would require reliable internet connectivity. Therefore, landing undersea cables at Kenya's coast became a number one priority of the government. The logics of global competitiveness explains why one could expect that multi-national corporations could be lured to locate their outsourcing needs to Konza technopolis.'Competitive advantage' doctrine charitably implies that each nation has its strengths—it is a doctrine that resonated with the vision of the Kibaki regime [Interview Bitange Ndemo, former Permanent Secretary MOICT]. The question of whose capital will facilitate competitive advantage and global competition is moot in a framework where the free movement of global capital is assumed. The global competitiveness discourse places emphasis on attraction of established companies, specifically from developed nations. It is taken for granted that investment will flow if the opportunity is legitimate. Therefore, the failure to attract interest must be reflective of the opportunity or its enactors. The inability of developing countries to be competitive is explained as being indicative of the immaturity of their economies or their governments (Mkandawire, 2015; Sabaratnam, 2017). Post-colonial theorists, on the other hand would differ and attribute the asymmetry of the global economy (Escobar, 1995; Wallerstein, 2004).

The current popularity of the theory of competitive advantage belies its contested origins. So far this thesis has characterised the developmental configuration and its discourses as cohesive , however, these discourses are often contested and resolved after upheaval and changes in personnel at the global institutions (Shakya, 2017; Yusuf et al., 2009).Generally speaking, national sociotechnical imaginaries need to be seen to fit within the narrative infrastructures of the global international development regime. Dr. Ndemo, former permanent secretary in MOICT offers some reflections:

> Civil service is sometimes asked to implement policies that they do not understand largely because such policies are driven by donor agencies. In some cases donor agencies themselves contradicted with conflicting conditionalities, making implementation of policy impossible (Bitange, 2015, p 5)

Shakya (2017) reports that at the World Bank, “it took some time for the newly launched program on competitiveness to find its feet in this heavily contested terrain.” (p 118). Michael Porter and other proponents of the competitive advantage of nations won the day, and these ideas assumed the status of the new narrative infrastructure for macroeconomic development. This supposed update to previous models continued to propagate similar assumptions and imperatives about progress, liberalisation globalisation, as articulated by Shakya and Clammer (2017):

> Two decades after the Structural Adjustment era, solipsistic terms such as ‘growth’, ‘prosperity’, ‘productivity’, ‘innovation’, ‘competitiveness’, and even ‘happiness’ and ‘sustainability’ have still rooted themselves as the tropes through which the high priests of economic liberalization continue to overshadow alternative imaginations. Indeed, this creates the ironical situation in which even ideas of ‘post-development’ are forced to define themselves against the

> conventional, neoliberal definitions of 'development' and in which 'alternatives' are seen as the deviation, not the mainstream. (p 88)

Thus, contemporary capitalism is re-narrativised as more benevolent and inclusive but still remains the same in terms of its outcomes because it is based on the same philosophy. Competitive advantage implies that developing countries can compete with more affluent nations. It is likely necessary to frame things in this way, because co-option into the global economy is all but mandatory.

> The global economy is also characterized by transnational production of goods and services (for sources: Held et al. 1999). There are about 53,000 multinational corporations, with 415,000 foreign subsidiaries. They account for about 25 per cent of global output, and for two-thirds of global trade. Indeed, one-third of world trade is in fact intra-firm trade, reflecting cross-border production flows. Moreover, these multi-national corporations anchor a much wider web of production networks made of small- and medium-sized businesses. Since corporations are internally decentralized, and since they often work in strategic partnerships with other corporations, the organization of production in global capitalism is made of transnational production networks, with multinational corporations at their core. All economies ultimately depend upon the performance of these networks (Carnoy and Castells, 2001, p 4)

The developmental configuration produces narrative infrastructures which mobilise state resources but cannot actually guarantee the outcomes that they promise. An analysis from a critical global social theory perspective, particularly the coloniality lens explains why the outcomes cannot be guaranteed. It is because power geometry and coloniality structure these engagements, and the power is in the actors who can select where to locate.

Ho's ethnography of Wall Street is exemplary of the fact that the potential to move across borders is indicative of power and is a wholly discretionary ability:

> […] during the Q&A session afterward, an African American male college student raised his hand and asked, "What is Goldman Sachs planning to do in Africa? Is it investing in the growth of African economies?" […] The question about Africa forced Paulson to delineate what, in particular, the global meant to Goldman. Instead of reiterating that Goldman was everywhere, that it was an expert in all markets, Paulson was quite clear about not needing or wanting to enter multiple markets around the world. He implied that being global is not simply to penetrate all spaces at once but, rather, to maintain lines of access through which Goldman has the ability to be flexible-to move in and out, to pick and choose as it pleases. Paulson's comment, "We do China; I like India," suggests that if and when he wants to be in India, Goldman could simply "marshal the troops" and move in. The global, here, is not a totalizing strategy; Paulson depicts a situation of choice, flexibility, and focused movement. This notion of globalization as "flexible capability" lies not only at the heart of Goldman's understanding and use of the global but also of many investment bank (Ho, 2015, p 83)

This brings home the reality that while 'globality' is an attribute sought after by investors/corporations there was no guarantee where or that it would be deployed at all. The aspiration for many locales is to be a site where companies where globalising companies/investors would choose to locate, but they have no real influence over this decision. Creating incentives to attract businesses appears to reflect authority and agency when fact it often leads to a race to the bottom with respect to regulation of MNCs. For a government, being in a position to resist having to make concessions is true agency.

Governments lack discretion over corporate mobility (Carnoy and Castells, 2001) and this is particularly visible in African locales. The African geographies, often perceived as risky and non-modern, have an uphill task when it came to being identified with globally competitive knowledge economies. The discourse of global competitiveness is a discourse through which all states have to be concerned about how they are perceived, and aim to legitimise themselves using a specifically EuroAmerican capitalist standard. All these states have to engage with whatever stereotypical narratives have emerged about their geographies, narratives which are generally mediated by coloniality. Whether it is talk of Africa rising or falling, Africa's fortunes are always set in contrast or comparison to Western locales (Hersman, 2006; Mosse, 2005; Seth, 2016). The outcome of this comparison is one that is ultimately defeating for Africa, and for much of the rest of the world, outside EuroAmerica (Mkandawire, 2015).

If the Kibaki government was accounting for global social orders, they would have calculated that even if they modernised the country, it's positionality in the global landscape would remain unchanged (Latour, 2007; Quijano, 2007; Stengers and Massumi, 2008b; Wallerstein, 2004; Watson, 2014). An email from a member of KICTANet makes this argument:

> I assure the advocates of BSP and call centers that they will achieve their objective of turning Kenya into a clerical hub for the rest of the world. Which is historically what Kenya's role was always meant to be within the British Empire. We are soon to become a nation of overqualified call center operators involved in an activity that does not provide skills transfer. […]What use is it then for us to be setting up

> Universities all over the country yet all we shall need are large armies of fellows with good spoken English, maybe French or Chinese with an average IQ and basic level of education (Yawe, 2008)

The author of the email is an entrepreneur whose business model is eliminated by the arrival of the cable as his MNC customers no longer have to rely on a physical presence in the country. He predicts that skilled technology jobs will be relocated outside of the country. When he hears about the landing of the fibre optic cable, the author envisions a future where highly educated personnel are working in call centre jobs that they are overqualified for. The author of the email is highlighting the difference between knowledge work and digital labour. There is a sense that the latter is more precarious, has a lower status and allows for less personal agency than the former. This ultimately has implications, the author feels, for the country's global power geometry. Tthe opportunities presented by ICTs are characterised by asymmetric power geometries (C. Katz, 2004; Massey, 1993; Mbembe, 2012, 2016a). Power geometries that are inherent in the "world system" (Wallerstein, 2004, 1989, 1980, 1974). This argument against the globalisation of the ICT sector, seems to be backed by data generated by other participants in the KICTANet email chains:

> Dr. Ndemo,
> Please allow me to differ with you on the subject of ownership. I have being spending a bit of my time through my private research firm to relate ICT to outcomes. A 2009 World Bank report has analyzed the impact of broadband on growth in 120 countries from 1980 to 2006,showing that each 10 percentage points of broadband penetration results in 1.21% increase in per capita Gross Domestic Product (GDP)growth in developed countries, and 1.38% increase in

> developing countries. Ghana's GDP was $74 USD in 2008 which represented a 7.8% growth, a lot of African countries had considerable GDP growth including Kenya but we have experienced decline in incomes, employment, health etc, why? The reason between 35 and 60% of African economies are owned by foreigners which means that 35 to 60% of the GDP growth leaves the country. Back in the day the economist used Gross National Product (GNP) were they argued that you need to deduct the foreign participation from the GDP to know the real impact on the local economy. To your point, my submission is that we need to have some considerable and in my view "majority" level of local ownership of the productive sectors of our economy in order for GDP to make sense, otherwise we need to find ways of dealing with "capital flight" otherwise we would create jobs etc but the return effect would be minimal. In the same way we want to create jobs etc, we need to also seek simultaneously to own the ventures that create the jobs. (Osiakwan, 2009)

Despite these multipronged arguments that first, increased connectivity made it easier to locate businesses outside of Kenya, which run counter to the governments expectations of MNC location. And second, locating foreign businesses in Kenya translates into lower rates of local entrepreneurship and productivity, and therefore led to job losses, the government still favours a BPO industry anchored by global corporations, and its employment capacities (Ndemo, 2009a, 2009b; Odera, 2008). Professor Ndemo is particularly inspired by the trajectory of Bangalore in India (Ndemo, 2017, 2015; Parthasarathy, 2004; Parthasarathy and Aoyama, 2006), which is a call centre Hub but also an arena of development for IT software—the kind of knowledge work that is idealised.

The government is particularly interested in job creation, which had understandably been one of its main campaign platforms, given the dampening effect that high

unemployment had had on the ability of Moi's regime to maintain its thrall over the polity.

> This [Business Process Offshoring] is a new but promising sector for Kenya and especially for its young people. It involves providing business services via the Internet to companies and organisations in the developed world e.g. Britain, USA, Canada, etc. The 2030 vision for business process outsourcing is for Kenya to "quickly become the top BPO destination in Africa." The goal for 2012 is to create at 7,500 direct BPO jobs [...] (Government of Kenya, 2007, p 14)

While Yawe's argument reveals a counternarrative to the narrative that connectivity would be a boost to the Kenyan economy, it is still likely that had the foreign companies materialised locally, they would have employed many people. In 2015, when I am conducting fieldwork, the general feeling is that Konza was a fanciful dream (Kamau, 2016; Timm, 2017). Several actors attribute the problem to Kenya having not done a good job of advertising itself as a BPO location (Kamau, 2016) or enacting the legal frameworks, for example those related to data sharing and data management, that would enable companies to locate in here (Mureithi, 2009b). Another critique is that Konza City did not need to be a 'real estate development' because a sociomaterial location for a technopolis already exists as Nairobi. Detractors feel that in its status as a real estate deal, Konza City, is simply an opportunity for the actors in government to allocate themselves land parcels whose value they knew would rise significantly in the near future. Rebecca Wanjiku writes a blog post to argue that the goals of Konza City required their own sociomaterial site:

> Its (sic) amazing how many Kenyans in social media and blogosphere outrightly condemn the project. […]Konza Techno City as an intervention is about a framework for attracting investors and hiving off an environment for rapid growth of the sector in years to come. […] As to whether the Konza Technocity should be a real estate development project or not, my answer would be that the city is about talent, innovation and entrepreneurship which thrive in humans. Those humans work, dine and sleep in buildings. People thrive in physical infrastructure. Of course one would say that in the advent of technology and the internet, innovators and entrepreneurs can work and interact virtually. That appears too simplistic an argument about a technology driven economy. Meaningful business interactions are very hard to fully virtualise. As Sam Gichuru of the Nailab once put it, "you cannot find a co-founder on skype". Even if you first met the would be co-founder on skype or Facebook, there are physical interactions that will precede gathering a level of comfort for goin into the co-founder marriage. (rebecca, n.d.)

Konza City is an investment in Kenya's future, and she anticipates that innovation and entrepreneurship will be the outcome. Rebecca Wanjku further argues that despite digitisation, physical spaces are still necessary.

In response to a newspaper article written by a prominent Kenyan economist who had described large infrastructure projects as 'white elephants', Ndemo reveals his vision of progress as bringing Kenya's out of a backward and poverty-filled past:

> Konza is not an aimless, wanton dream. It is a planned project complete with justification and forward-looking elements. But it is still a dream because if you don't dream then you won't get anywhere. Dreams are the currency of progress. Dreaming means looking forward into the future. Those who denigrate dreams condemn us to our miserable past. "Build it and they will come" is the common denominator throughout the history of modern economic development, from the

> moment the first turnpike in Pennsylvania, USA, was built to a metropolis like Dubai, which is based on nothing but a dream. (Ndemo, 2017)

This issue with this development aspiration is that it limits agency by making success dependent upon legitimation by external actors. The undersea cables are touted as having a net societal benefit, but Konza technopolis on the other hand is as a white elephant and/or a site for the cynical enactment of grand corruption by a neopatrimonial state (Kivuva, 2015c; Munguti, 2014; Ndii, 2014; Roy, 2013). The international companies never arrived. Those who continued to champion the idea, felt that it had not been given a chance to succeed. That the regime that took over from that of President Kibaki was not as committed to Konza City, and therefore, the project floundered.

5.3 Infrastructures of Sovereignty

There were indeed those who felt too much emphasis was being placed on an outsourcing industry. The response to them was hat Kenya had the right ingredients to be globally competitive in this sector:

> Firstly, it is true that BPO has taken centre stage in many discussions surrounding Kenya's ICT development and growth and it is a good thing, here's why:
> We are looking at a USD$310 Billion industry by next year, up for grabs for any destinations that get it right. India is currently taking up 45% of the total share and China and Phillipines are steadily growing. And what's more, it can only grow, with the fuel prices soaring each year, what choice is there for the companies out there to look for more affordable means of operating. It is a fact that the western countries are looking for new alternative destinations to Asia so they do not put all their eggs in one basket, not with the terrorism threats all over.

> Where else but Africa. Why would Kenya not put its house in order to take a piece of this pie? (Odera, 2008)

By investing in an undersea cable and Konza City, the government is acquiescing along with the rest of the world to the global system. Nevertheless, within the strictures of this framework, it is able to enact a vision for open access to infratsructure. When a newly appointed Dr. Ndemo arrives at the Ministry for ICT, one of his first visits is to the head of the World Bank who promises to support the government's efforts in industrialisation through ICTs (Ndemo, 2015).

The World Bank is the main financier of Konza Technology City and also supported a public-private consortium to develop the East African Submarine System (EASSy) undersea cable project. The World Bank is willing to lend the countries in Eastern and Southern Africa US$30 million, the rest of the US$235 million would come from the private operators. Some project partners prefer a closed access model that allows companies investing in the cable to maintain exclusive access (Kariuki, 2019; The Economist, 2007). Kenya prefers an open access model where any service provider can access the infrastructure. While the state does not have any discretion over whether foreign investors and companies choose to do business in Kenya, they do have authority over how they do business in Kenya. The government's commitment to 'open access' cables reflects its interest in keeping broadband prices as low as possible (apc.org, 2006a; "Kenya plans open access 4G by 2013," 2012). In contrast, the SAT-3 cable which services West Africa has a closed access model where a monopoly operator determined the prices in each country (The Economist, 2007). The result is

that satellite internet, which is typically more expensive, is a less expensive option in that region (The Economist, 2007).

This question over open-access can also be interpreted as a referendum on whether infrastructure technologies are tools for national development or sites for commercial speculation. It is a question that preoccupies the members of KICTANet. Their email exchanges register the split between the membership over closed versus open access (apc.org, 2006b; Osiakwan, 2006):

> The project is at a crossroads: it can either follow the monopoly practices of its predecessor SAT3 or offer an Open Access regime that will increase competition and lower prices, and give consideration to development needs. [Email, February 28, 2006]

Advocates for a private-sector led model held the view that the private sector is better than the government at managing these infrastructures, and also prefer the profit motive as means for regulating use. According to them, the profit motive would result in high standards, and they were leery of states that exacted pricing regimes (The Economist, 2007).

> Some African governments, including South Africa, want the consortium to be owned by a majority of African companies and to respect regulated, i.e. low, prices. They threaten EASSy's operators that they will block the project if those conditions are not respected. On the other side, the operators argue that this is an attempt to hijack an existing commercial project and make it a part of the NEPAD ICT broadband Infrastructure Network, a states- led project benefiting from the UN support. While governments claim that only a state project would serve the common good and prevent the risk of a consortium monopoly, the operators assert

> that their project, although necessary to Eastern Africa's development, has been halted by the public sector. According to them, governments want to claim paternity for a crucial development project, although the private sector has responded to pressures from the World Bank and seems to respect its development criteria. (Girsowicz, 2007)

The Kenya government's view of ICTs as a tool for modernisation is as at loggerheads with commercial interests[10] (Kariuki, 2019; Ndemo, 2015).

> Squabbles that delayed the start of work on the Eastern Africa Submarine Cable System have been resolved, allowing the fiber-optic cable project - which is designed to link Africa to global telecommunications networks - to move forward. At a meeting here this month, information and communications technology ministers from eastern and southern Africa agreed to give all African nations free access to the undersea system, said Sammy Kirui, chairman of the project management team. The debate over open access had threatened the $200 million (U.S.) project because some member countries wanted to charge other nations for access rights - a position that went against the wishes of African economic development organizations and the World Bank. The Kenyan government announced in May that it was withdrawing support for the project because of the internal wrangling. At the meeting, though, technology ministers from Botswana, Kenya, Malawi, South Africa, Zambia and Zimbabwe set a new schedule calling for work on the cable system to begin by September and be completed in the fourth quarter of 2007, Kirui said. The targeted completion date is four months later than previously planned. Project managers are still evaluating bids from companies that are vying to lay the cable, according to Kirui. (Malakata, 2006)

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[10] Interview, Dr. Ndemo April 28, 2015

When talks on EASSy stall, the Government of Kenya (GoK), decided to proceed with its own project. Kenya's TEAMS undersea cable project came about as the result of the breakdown in negotiations over the business model for the cable (apc.org, 2006b; "EASSy's Path," 2008; Platforms: ICT in Africa, n.d.). The ability to opt-out rests entirely on Kenya either being able to finance an undersea cable on its own, or in eliciting the interest lenders (rather than investors). The distinction here is that lenders would receive their returns on interest payments, while investors would have expected a share of the profits. Pro-private sector led discourse often does not acknowledge that one form of capitalism will often conflict with other forms of economisation. In this case, companies seeking to profit from access to the cable, appear to constrain the downstream emergence of other economic activity which would benefit from an open access model.

In the end, The East African Marine System (TEAMS) connecting to the United Arab Emirates (UAE) was financed by Kenya, the UAE, and the Aga Khan Foundation. If that option had failed, Telkom Kenya, in which the government had a 35% share was also in talks to connect to the Port Sudan undersea cable (Gakuru, 2009). Three undersea cable projects went ahead: EASSy (apc.org, 2006c; Malakata, 2006; Walubengo, 2006b), TEAMS and a closed access, private sector project: SEACOM. TEAMS received most local interest because of its potential to lower broadband prices. The lower prices led to a proliferation of digital enterprises, diversification in the kinds of digital products and services on offer, and an overall increase in the uptake of broadband services.

5.4 Economization of the Internet and New Markets for Digital Goods and Services

News of the impending arrival of cabling infrastructure begins to alters the existing arena of development. This restructuring reveals some of the expectations that actors have regarding the impacts of the undersea cable. The newly elected regime, proceeds with the privatisation of Telkom Kenya and its subsidiary, Safaricom. The process is rather slow and it retains a financial interest in both.[11](Kagai, 2006; Makai, 2006; A. W. Munyua, 2005a).

> Kenyan businesses have long complained that poor telephone services due largely to Telkom's inefficiencies add a huge cost to doing business in the country, east Africa's biggest economy. But the government said it had embraced key reforms to boost efficiency in the industry. (Ndemo, 2015)

The government may have been ambivalent about the sale of the public sector organisation, but it supports the liberalisation of the market. The news of the cable changes the market, smaller internet service provision companies are bought out by larger players, some of them foreign companies and others go public on international

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[11] The controlling stake of Telkom Kenya is purchased by Orange, a French corporation. Safaricom's management stake is bought by Vodafone. The government retains 35% shareholding in both companies.

stock exchanges in order to finance expansion. These are the first, and generally unremarked upon 'exits', of local digital sector firms in the arena not yet known as Silicon Savannah. I interview a founder of a startup that sold online discount coupons for various goods and entertainment experiences online. Before establishing his own company he had been employed in a number of internet-related enterprises that were the first to be established in Kenya. His recollections animate the textual, archival evidence:

So, come 2008 [the] undersea [cable] is starting to become a thing and there starts to be some consolidation in the market. Some smaller players get bought out by Safaricom […]. So that was around the first time now that the space started heating up in terms of, there was real innovation in the sense that here comes now a service provider that's going to offer TV, internet and a phone, one fee, one cable to your house. So, 2008/2009, I think the cable goes live, I think in 2009. Speeds jump, prices fall so at Wananchi [internet provider] we were selling now a 1 MG/s at Ksh. 1,999 [US$ 20] whereas AfricaOnline was selling their 128KB still at 9,200/-[US$92]. So, you had influx of people [customers]. People just started switching service providers and I guess that's my experience of Wananchi. Wananchi (or Zuku) was basically a start-up, without being called a start-up because they completely pivoted [from internet service provider, they became a triple play service company]. They built a new business from scratch, they had no structures. They just had a lot of capital. They were able to hit the ground running, market until high noon, so by the time I was leaving there, the number of people online had hit 5/6 million so that's in about four years.

From 400K to ten times the number. [Interview, Serial entrepreneur]In the previous, section, I excerpt an email from an entrepreneur who sees BPO as an anathema to the goals of creating a knowledge economy. In contrast to the excitement that is occurring in some parts of the internet provision sector, the full excerpt of his email below demonstrates the mixed outcomes of the arrival of the undersea cable:

> Today I saw the future of Kenya after the fiber land and I feel duty bound to share the experience. For many years my business has provided server solutions to multinationals for groupware, our main selling point for having servers located locally was always the unreliable internet links. Today one of my clients, a multinational company has moved their servers to Europe and are using thin client technology to connect the desktop user. I saw a similar scenario when multinationals where allowed VSAT terminals, as many technical activities got consolidated either at head office in Europe/USA or regional processing centers in India. What we were left with was clerical and other none core activities. With the downturn in the world financial markets expect more centralised control of corporate activities and offshoring of currently local functions. I assure the advocates of BSP and call centers that they will achieve their objective of turning Kenya into a clerical hub for the rest of the world. Which is historically what Kenya's role was always meant to be within the British Empire. We are soon to become a nation of overqualified call center operators involved in an activity that does not provide skills transfer. Come January I will have lost a prime revenue earner as all that will be expected from us will be blowing the computers and offering 1st level support on productivity applications and printing issues. This will mean that I have no need to retain high skilled personnel. What use is it then for us to be setting up Universities all over the country yet all we shall need are large armies of fellows with good spoken English, maybe French or Chinese with an average IQ and basic level of education. Am I an alarmist? I do not think so I am a realist, I am reengineering to meet the challenge but can someone provide a conducive environment. Ndemo can we get collocation centers made available,

> the newly redressed ISPs are not about to add value in this direction. Can the government take the lead in outsourcing its activites, we are ready to setup a call centre for the Government in ISIOLO or at RIAT in Kisumu, I dare you to give me the challenge. Have a god filled Christmas & a prosperous new year (Yawe, 2008)

The author has resigned himself to the fact that BPO is the future, but asks that the government not allocate call centre licenses to foreign companies whose mobility allows them to decamp from the country whenever they please. Instead, he asks that the government allow local entrepreneurs to run the call centres in towns and cities outside of Nairobi, where they might make a difference by creating jobs and servicing the government's own modernisation agenda. ICTs remove spatio-temporal boundaries so that markets are no longer geographically localised (Nambisan, 2016). Yet, this aspect of what Harvey (1989) helpfully termed as "time-space compression" does not unfold in the same way for all actors, in all geographies (Harvey, 2006, 1989; C. Katz, 2004; Massey, 1993).

When they talk about digital start-ups actors have in mind on-demand service software applications and internet content creators. They are the digital firms that are expected to thrive in this environment. Many of the entrepreneurs that I encounter fit within this category. The firms differ in terms of their customer orientation. Business-to-customer (B2C) firms cater to individual customers, business-to-business (B2B) and business-to-government (B2G) create products and services for those particular clients. Products that serve the mass market are the seen to be the ideal. There was something about being widely visible that was often correlated with success.

One particular application is a standout in this arena—M-Pesa. M-Pesa is variously described as a mobile phone banking service, a digital wallet and other terminologies that convey its role in Kenya's financial system. M-Pesa is a service of Safaricom, a mobile phone operator that was once owned by KPTC. Vodafone purchases a 40% management stake from the government in 2002. Safaricom is therefore not a start-up, nevertheless what M-Pesa is able to achieve is regarded as an exemplar of what is possible in the arena (Collins, 2017; Kivuva, 2015d; Ndung'u, 2018). The M-Pesa platform begins as a money transfer technology but over time is payments infrastructure becomes integral to how the arena of development operates. M-Pesa is the payments portal through which digital enterprises in Silicon Savannah are remunerated by their customers.

Safaricom's trajectory can tell us a number of things about the local market for digital technologies. The ubiquitous uptake of the service reflects exceptionally high mobile penetration rates (James, 2013; Unctad, 2011). There is demand for communication devices, which in this day and age maybe seem like a banal observation but Kenya's mobile penetration rates are unusually high. In addition, there is great demand for money transfer services. Given the lack of digital payments infrastructure, it is almost inevitable that someone would draw links between the money transfer service and payments services, and eventually financial services. In fact, in an email to other KICTANet members the author of the excerpt below talks about testing the utility of the M-Pesa money transfer services as a mechanism for making payments. The author also predicts Safaricom's future as payments service:

> At the risk of giving away a perfectly good business idea let me say now that online purchases/settlement (Kenyanised for mobile phone use) is the next big thing. […] (note to self: remember to write post on how Safaricom is transforming into a financial services company). I tried Sambaza [a service that allowed customers to send each other airtime] for online purchases with some moderate success but its problem was always convertibility of airtime into cash. With M-PESA however, this is not a problem and I've already started experimenting by selling an e-book online. The response so far has been encouraging and I'm now working on tweaks to improve the buyers experience. M-PESA is a runaway hit, and when a smart entrepreneur starts selling a basic commodity through M-PESA it will be the beginning of a revolution. So popular is M-PESA that it has totally eclipsed its rivals from Celtel and Telkom ($1,000 for anyone who knows what the competing products are called!) and I plan to be in smack in the middle of the gravy train. (Karanja, 2008)

M-Pesa is indeed very successful, in terms of uptake and profits. Besides the undersea cables, M-Pesa is the other technology infrastructure whose presence activates and shapes the arena of development. Firms sought to integrate with M-Pesa, in order to attract a portion of Safaricom's subscriber base and access to their infrastructure. As an infrastructure upon other digital technologies are built, it becomes representative of a platform technology (Srnicek, 2017). The primary commodity of the platform economy firms like Google and Facebook is data (Srnicek, 2017). This may represent its future. Instead, using an M-Pesa account is a pipeline to other financial services offered by Safaricom. Currently, the data generated by Mpesa's users is not monetised by Safaricom in a direct way. Safaricom instead relies on charging transactions fees for the use of the service. Safaricom focussed on mobile phone users rather than cultivating a market for the data it generates. This contradicts expectations derived

from the experience of Silicon Valley firms, about how a firm like Safaricom might behave.

M-Pesa is a product of user behaviour. Kenyan users had appropriated the mobile phone to send airtime as currency long before M-Pesa streamlined the money-transfer process. This is indicates a need for the initial money transfer services that M-Pesa offered. Safaricom has been exemplary of user-producer coupling as advocated by Foster and Heeks (2014). They develop a myriad of services that mirror and respond to user behaviour. Coupling with the user in a mutual shaping and shared learning dynamic is what enables technology producers to become part and parcel of the processes of appropriation. For instance, 'Please Call Me', a service that allowed one to send a free text message asking the recipient to respond with a phone call eliminated the need for what we called 'flashing', where one would make a call and hang up when it started to ring, signalling that the person on the other end should call you back. Another user practice of sending airtime credit codes via text message in order to enable the recipient to top up their phone, materialised as the 'sambaza' service. It eliminated the rigmarole of keying in the long numerical code into a text message. One simply used a SMS or USSD functionality to indicate how much and to whom airtime credit should be sent and it was deducted from one's airtime. The formalisation of 'airtime as currency' into services like M-Pesa demonstrates how actors are able to innovate around their constraints. The M-Pesa service eventually eliminated the need to convert from airtime to cash.

Safaricom has used the framing of ‘banking the unbanked’ or financial inclusion to characterise its services (Akoh, 2015). The ICT4D discourse is particularly salient in Silicon Savannah, so much so that a private sector entity has been able to tap into its narrative infrastructure. A digital social enterprise arena generates firms who promise to deliver on socially good outcomes, and to remain financially viable while doing so. They make these promises to selectors who represent the humanitarian element of the developmental configuration. Their claims are rewarded through grants, as well as recognition of their altruism. The next chapter will discuss how this particular aspect of the arena of development begins to experience a backlash because its logics are understood as antithetical to profit making. According to a sentiment that grows in prevalence while in the field, returning large profits and achieving scale are the ideal objectives of an arena of development. This is the narrative infrastructure of digital capitalism or ICT4VC.

Safaricom, a for-profit company, and now subsidiary of a global conglomerate, successfully deploys the ICT4D discourse in order to secure funding from development actors like DFID (Akoh, 2015; Areba, 2014; Hussein, 2015; Mbugua, 2015; meshack, 2015). A profit-making entity seeking to finance its activities with money set aside for non-profits could be described as rent-seeking behaviour, but at the time Safaricom receives many accolades for demonstrating how a corporation could achieve social good outcomes.

For a long time, ICT4D scholarship enamoured with M-Pesa does not interrogate what M-Pesa says about the Kenyan user, other than they are poor or unbanked people. Yet, very few other so-called ‘pro-poor’ and ‘below-the-radar’ (Kaplinsky et al., 2009) technological interventions have been taken up quite as enthusiastically, even when they have been provided for free (Wyche and Steinfield, 2016). M-Pesa also has not been adopted in other contexts where uptake is expected, therefore what is it about the Kenyan user base that made them interested in this particular service. I consider in the section that Kenyans wanted to reduce their remoteness.

5.5 Eliminating Remoteness through Inclusive Access

For a private-sector actor like Safaricom, the imperative to achieve critical mass in order to make deploying the technology financially worthwhile also made them more creative about inclusion. According to Safaricom’s first Vodafone CEO, Michael Joseph, the genius of M-Pesa is not the technology and its capabilities, but rather recruiting thousands of agents from the furthest reaches of Kenya, such that one could send money or convert it into cash in even the remotest locations (Joseph, 2017).

> But the biggest challenge was achieving critical mass. We needed enough people to use M-Pesa that it would become viral and self-sustaining at scale. The original business plan aimed for 350,000 customers at the end of the first year. Instead, I drove our team very hard to aim for a million customers in year one. We invested heavily to make this happen, and worked incredibly hard to train and nurture our network of agents, many of whom were ‘mom and pop’ stores more used to selling goods than receiving and handling cash from their customers (Joseph, 2017).

Safaricom counters a lack of digital literacy with human resources; deploying people with know-how as well as technology, was effective.

The Kibaki government's position on inclusios and ubiquity is not only a strategy to make Kenya a competitive global destination for ITES-BPO services, another goal is to facilitate modernisation and therefore, according to the government's view, reduce inequality (Interview, Dr Ndemo April 28, 2015). The government is not only interested in bringing the infrastructures of modernity to Kenya, they are looking to bring Kenyans into modernity. Thus, the government is interested widespread uptake of ICTs (Adera et al., 2014; Mureithi, 2017; Ndemo, 2015). In practical terms this means locating infrastructures of connectivity in these areas that are understood to be remote, and lowering the cost of access. It is this aspiration that motivates the decision that cable infrastructure has to be open, rather than closed access. A speech by President Kibaki highlights the value of mobile devices for development:

> Ladies and gentlemen, as you are aware, access to knowledge, information and communication is crucial to the development of any country today. By enabling people to communicate and interact, despite large physical distances, mobile communication has brought important changes in work practices and lifestyles. Indeed, investment in Information and Communication Technology infrastructure and development of appropriate human skills is key to ensuring the competitiveness of our country in the unfolding global digital society. It is for this reason that my Government created the Ministry of Information and Communications. (Kagai, 2006)

In a world where the default policy position is a socio-economic vision that seeks to globalise capitalism, ICTs are conceived of as one of a set of means to facilitate

integration, not only of the economy but marginalised individuals. This is a discourse that serves private sector actors also interested in reaching as many customers as possible. Addressing the marginalisation of rural areas in developing countries has been a subject of state and developmental configuration efforts for decades. Digital technologies, with their ability to compress space and time, appear to be a good solution (Harvey, 2006; Cindi Katz, 2004; Massey, 1999; Mosse, 2005).'Remoteness' gives a sense of geographic distance but a temporal sense of being unconnected. Development projects are often about bringing people out of the past (Cindi Katz, 2004; Ndlovu-Gatsheni, 2018), which is why they overlap with efforts related to 'futuristic' technological advancement. Infrastructures are the "material substrates of modernity" (Park, 2017, p 5).

> The 2030 Vision aspires for a country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities, and telecommunications. By 2030, it will become impossible to refer to any region of our country as remote. Furthermore, to ensure that the main projects under the economic pillar are implemented, investment in the nation's infrastructure will be given highest priority (Government of Kenya, 2007, p 6).

Policy actors envision these projects as scale-making endeavours that seek to make places 'global' (Cindi Katz, 2004; Park, 2017). Dr Ndemo expressed the view that there were "many Kenyas", each of these places through development, are brought close to some ideal.

An exemption on the VAT on mobile phones in the 2008 national budget to "promote affordability subsequently increasing penetration and reducing the cost of customer

acquisition" (Communications Commission of Kenya, 2009, p 3) is evidence of the goal of ubiquity. The rural digitisation project known as Digital Villages project is another, it provides successful applicants with loans from the government to set up *Pasha* Centres—digitally enabled workspaces—that would be sites for social learning to increase digital literacy in local areas. Depending on the capabilities at the locale, the Pasha Centres would operate as internet cafes, internet training centres, incubators or co-working spaces.

> The project is a government and private-sector initiative, mapped out using political districts. Every constituency represented in Parliament will get a minimum of eight workstations, either PCs or monitors hooked to PCs, grouped within a 15-kilometer radius. The first Digital Villages are expected to go online by the end of June. The Ministry of Youth Affairs' Youth Enterprise Fund (YEF) is financing the project, rolling it out in 40 constituencies before moving to other areas. The experiences of the first constituencies will inform implementation in other areas. Telecommunication costs and the need to develop local content and software applications will challenge the initiative, but officials have high hopes. "Each Digital Village will have a VSAT base station and will be expected to form the basis for e-commerce in the country," said Bitange Ndemo, the permanent secretary in the Ministry of Information and Communication. Ndemo expects young entrepreneurs to borrow from the YEF. The Ministry of Youth Affairs is financing private microfinance institutions, and prospective businesspeople are expected to invest at least 100,000 Kenyan shillings ($1,550) to set up a "digital village" with two PCs. The ministry says it will provide training in entrepreneurship, and the microfinance institutions have existing training programs. (Wanjiku, 2008)

The Digital Villages concept is in-keeping with another popular discourse promoting the widespread deployment of ICTs—bridging the digital divide.

The government-led regional entrepreneurship centres i.e. Digital Villages like Konza City, did not generate the expected results. Demonstrating that 'if you build it they will come' may be lacking in merit as a policy truism, overall. Infrastructures that are responding to demand have a different trajectory than those that that aim to create usage patterns.

> [Six years later in 2013] only 63 centres [out of 210] have been set up; some of the people who received the money thought that it was general government aid, not to be repaid, others thought the ICT Board would help them run their businesses. Some invested the money in other existing but financially ailing businesses while others took the loan and bought cars. The Board says it has no intention to continue with the project until a monitoring and evaluation exercise conducted by Deloitte is implemented. The project is also being handed to a private sector consortium to administer the loans and the recommendations made by Deloitte. (Wanjiku, 2013[12])

Actors' response to the Digital Villages programme indicates that the ICT Board had not fully designed the goals of the programme or communicated them to users. Furthermore, for the Pasha Centres to work, there had to be individuals other than those receiving the loans interested in using the centres. The lack of uptake also likely reflects a lack of knowhow associated with making use of the technologies on offer

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[12] https://www.pcworld.com/article/2036710/kenya-ict-board-learns-tough-lessons-from-digital-villages-project.html

(Wyche and Steinfield, 2016). Dr. Ndemo perspective on the lack of uptake was that implementers had not accounted for sociocultural factors:

> [….] The team should have taken into greater consideration regional, ethnic and gender factors that sometimes are in conflict with the desired outcomes. We also assumed that the business portfolio they had prescribed would be what the rural folks wanted, especially e-learning and e-mails. Instead, most of them preferred smart phones to access their e-mails. (Bitange, 2015)

On the other hand, Safaricom is able to resolve the issue of a lack of digital literacy. It is a capital-intensive process—educating users through advertising, translating their behaviour into services and hiring a battalion of agents. A survey of its advertising materials and campaigns will reveal Safaricom's awareness and propagation of its perception as a national entity. Safaricom's identity as a 'national' entity went beyond mere performance. Its narrative appealed to nationalist feeling (Tuwei & Tully, 2017) and its practices and activities embedded it in the social fabric.

> The unwieldy entangling of this multinational corporation and the postcolonial state are refiguring notions of citizenship and bringing Safaricom into a direct, even intimate, relationship with Kenyans. Many Kenyans will tell you, with a hint of pride that their countrymen are "peculiar," and Safaricom invests considerably in the cultural work of fitting this distinctiveness. In doing so, Safaricom has established itself as a corporation deeply attuned to a national milieu, in large part through the calling forth of Kenyan publics as new markets. Put another way, as it extends its infrastructures to a growing body of paying customers, Safaricom invokes a seemingly noncommodified public: the nation. (Park and Donovan, 2016)

Ultimately, it is Safaricom a private sector that "sees" Kenyans most clearly. Being a private sector actor is not necessarily the reason it is able to do so, as many other mobile phone providers do not achieve the level of its success. M-Pesa is the epitome of what is envisioned by developmentalists discourse on inclusive innovation. Through the framework of 'banking the unbaked' M-Pesa represents the imbrication of development/poverty reduction and also processes of recruitment into capitalist modes of existence. The belief in the beneficence of modernity leads proponents of these policies not to question what it is we are 'including' people into.

5.6 Fractured Visions of Inclusion

Once the ICT infrastructure is in place, the variety in expectations about the role of ICTs within society and their role in economic development become evident. The debates about the modalities of inclusion, however, do not interrogate whether these inclusions are ultimately predatory. Recent scholarship is concerned with the extent to which digital technologies facilitate the exploitation of workers (Aloisi, 2016; Bederson and Quinn, 2011; Donovan et al., 2016; Graham et al., 2017; Heeks, 2017) and users (Sadowski, 2020; Srnicek, 2017). Workers are employed in modalities that are precarious and users are integrated into global patterns of consumption. In Kenya, these critiques have not yet become salient, digital technologies are seen as mostly beneficial.

The Kibaki regime is interested in contrasting itself from what it characterises of Moi's outmoded approach to governance (Bond, n.d.; Hornsby, 2012; "President Mwai

Kibaki's Inauguration Speech," 2002). Given its roots in opposition politics, it is familiar with the international move towards multistakeholderism and interested in instituting consensus building governance strategies. For non-state actors like KICTANet and others, there are now opportunities to express views and contribute to the vision for development. It is at the national, rather than the international, level where KICTANet's expertise and enthusiasm is most evident. However, once the ICT infrastructures are established it becomes apparent that the rationales for their existence had been rooted in a variety of expectations (apc.org, 2006b; meshack, 2015a). The result is that there is somewhat of a cacophony in the newly democratised marketplace of ideas.

> Multiple and unpoliced spaces of popular expression, including expanded airwaves, a vibrant Internet and the runaway success of mobile telephony, turned the Kibaki presidency into a teeming marketplace of debate on each and every political and non-political issue….A whole legion of NGOisms entered the public service once the chorus of "accountability and transparency" found seats at the high table in Kibaki's first term (Nyairo, 2015, p 49).

The multitude of voices, once united in a clamour for ICT infrastructure are raised in acrimony when it is time to articulate the agenda and the desired outcomes. Nyairo's refers to a 'legion of NGOisms', which is what I have identified in thre previous chapter as often interested in legitimating the perspectives of the development configuration.

KICTANet's members have long campaigned for ICTs. Prior to the liberalisation of the sector, the internet and therefore, international calling, is a luxury. NGOs and

INGOs funded by international development organisations are some of the only actors that want to and can afford expensive internet and mobile phones (Mureithi, 2017; Nyairo, 2015). Still prior to the landing of the cables at the port of Mombasa, the cost of the internet is beyond the purchasing power of most households. In 2000, when satellites were the primary internet infrastructure (Kariuki, 2019) the rates are between US$100 and US$166 per month (Africa Telecom, 2000). The use of internet services, including VOIP, and the ability to afford them became a means of social and political indexing. Aside from revealing economic status, during the Moi era they often symbolise progressive elitism and enrolment in opposition politics. The Moi's government develops an aversion to them and bans them from government use (Mureithi, 2017). Market liberalisation creates a competitive market where prices drop and internet users rise from 200,000 in 2000 to 1,054,900 in 2006 (Farrell, 2007). The expectation is that this would result in even more users of an increased variety of digital services that address their everyday needs.

In the ICT for development discourse (ICT4D) digital technologies are touted as means for bridging inequities by including marginalised actors and regions in the global, digital knowledge economy (Uniwn, 2017). Previous sections have explained that government is interested in industrial development—which translates into attracting multinational corporations to the country as a mechanism for mass job creation. A secondary goal is encouraging local business growth (particularly in rural areas where the presence of multinational corporations is unlikely). This vision thus prioritises companies like IBM over local companies. The government spent $10

million to support the establishment of an IBM Global Research Lab in Nairobi. While the one wing of the development configuration is preoccupied with national economic development and globalisation, another is interested including poor and low income citizens into the digital revolution and providing them access to digital technology through means that might not necessarily be market-driven. It can sometimes appear that these goals are working at cross-purposes, the developmental configuration represents contested discourses, afterall. What they do share is the inherent coloniality of development and the context of a capitalist global economy.

Members of the digital configuration are also in the thrall of the knowledge economy discourse. The expect that access to computing technologies will also increase poor people's access to higher income employment. A line of discourse of the developmental configuration, particularly the development banks, is predicated on including people who are seen as marginalised into a highly specified economic system (Escobar, 1995; Grosfoguel, 2007). A system that privileges capital over other inputs into production like labour and natural resources (Harvey, 2005; Wallerstein, 2004). In this way development (as the goal of reducing poverty) and global capitalism are imbricated. Digital technologies are expected to hasten this inclusion, and lead to greater economic equity across geographies (Castells, 2000; Donner, 2015; Harvey, 2006; Meagher, 2018; Warschauer, 2004). While the goal is pro-poor it propagates the notion that practices and livelihoods that have been seen to work in a particular context can be effectively universalised across the globe. This is a reiteration of the view of

the knowledge economy as an egalitarian trope that is available to every geography (Heeks, 2017), and that fails to take into account power asymmetry.

Discourses like inclusive innovation (Foster and Heeks, 2013), jugaad innovation and innovation below-the-radar (Kaplinsky et al., 2009) provide an opportunity to envision how poor people could participate in the digital economy. They tend to be exceptions to the for-profit model for in which technology caters to monied classes, rather than as critiques or alternatives to it. These technologies are not indicators of heterogeneity of modes of existence and alterity, rather they are poor-man's options for inclusion into a global capitalist system. Alternative modernities and alternative development paths are difficult to envision, when one is steeped in the status quo (Ndlovu-Gatsheni, 2018). M-Pesa is a technology that is often praised as a manifestation of the pro-poor technological vision. It began as a money transfer technology and is now a vector for a large number of payments in Kenya, however, this also means including poor and low-income people into extractive economies that ultimately seek to increase their consumption.

There is an obvious distinction between those who see inclusion as a means of generating profit and those who saw it as means of reducing poverty. But even the poverty reduction discourse there were differences in approach. Contestation about how to implement development (Foster and Heeks, 2014) is a hallmark of development economics and policy. In some development arenas, the thinking is that macro-economic development and industrialisation are the primary means through which a

nation can cater to its citizens. Other actors are dedicated to poverty reduction which seeks to have impacts at the micro-level. And even within those broad categories there is contestations within them. Individual stances and interests are closely associated with professional identities and their areas of expertise.

A surprising difference in perspective is friction revealed in the KICTANet emails over the rapid uptake of mobile phone technology. Some actors who have previously agreed on the goal of making communications technology 'ubiquitous' in order to resolve poverty, see the widespread adoption of the mobile phone as an anathema because it does not deliver on the ultimate goal of internet for all. It initially appears to be an argument over technical specifications and what counts as 'broadband':

> I beg to differ. Today you can obtain 5-7Mbps on a 3G-capable mobile phone (tested in Kenya on Safaricom's network by Aki & the local tech group Skunkworks). EDGE network can offer up to about 470Kbps. If we take the generally accepted parameters for broadband as anything above 512Kbps then we can actually argue that mobile IS broadband - when 3G and EDGE capabilities are available. This issue has actually been taken up by the W3C consortium and they have recognised the huge disruption potential that the mobile phenomenon in Africa has to usher in a new era of human/computer/network interface – to this end they are holding an event in Mozambique in April 2009 aimed at bringing together thought leaders, technologists, policy makers etc. to take a better look at the subject. The future is bright! (Longwe, 2008)

The sentiments raised in the KICTANet emails, however, include the sentiment that rejoicing over the spread of mobile telephony demonstrates disinterest in equality between classes of peoples (represented by the difference between those that could

access computing facilities and those who could only access the internet through mobile phones), as argued below:

> Dear XXXX and all, while I totally agree with you on the mobile success and how it propels Africa to the forefront, I would caution that we need to move beyond that and see the need for broadband in African homes and offices as a basic utility in the knowledge economy. Sometimes the temptation to be caught in your success can blind you from engaging new frontiers. Let's not get caught in semantics because MOBILE is mobile and BROADBAND is broadband, if the later gets delivered through mobile platforms then fine but the elements are different. It is important to keep in mind also that broadband can come in many forms and we should be open to exploring the whole grail [sic]. You are right on spot with content and the need for local, national, regional and Africa wide interconnectedness. [KICTANet Email, December 8, 2008]

The argument here was that there needed to be an even playing field. A subset of actors counter argued that user preference for mobile phones was a reflection of user agency. They argued that the low-income segment of the population was demonstrating preferences for particular sociotechnical affordances. Mobile phones, in short, had become prevalent because they were more appropriate. They felt that the hand-wringing over mobile phone uptake was based on reductive, cosmopolitan understandings of the groups in question. They asked, if the voice of the 'unconnected' grassroots was heard, would clamour for broadband? According to them, it was hypocritical to speak of empowerment and then challenge the legitimacy of users' choices because they had not readily been co-opted into the more cosmopolitan/modern option. Derrida and Spivak draw our attention to the problem of representation and voice on behalf of others—that they come to epitomise and

represent a group, and in that way, other voices are silenced (Derrida, 2000; Spivak, 2003; Watson, 2014). Often discussions of socioeconomic disparity in Kenya elide the fact that there are rural ecologies are heterogenous and that poor actors are strategic. A coloniality of capitalism lens suggests that in fact the structure of the inclusion of these actors is likely to be into extractive consumption patterns or exploitative wage labour. These patterns are become increasingly evident in recent scholarship on the platform and gig economies in developed countries (Aloisi, 2016; Barratt et al., 2020; Graham, 2016; Graham et al., 2017; Minter, 2017; Srnicek, 2017).

Digital technologies are indeed able to compress time and space and bring places in closer proximity (Harvey, 1989). They are indeed also accelerating the inclusion of actors into the global market economy. It is increasingly anticipated, contrary to many of the promises made on behalf of inclusive ICT, that the benefits of this will not be widespread and that ICTs can entrench inequalities (Alfrey and Twine, 2017; Amrute, 2019, 2016; Betancourt, 2015; Eubanks, 2017; Noble, 2018; Srnicek, 2017). This outcome of digital capitalism could have been anticipated based on past experience with unregulated capitalist relations and the existing global structures of power (Bear et al., 2015a; Betancourt, 2015), which essentially translate into including actors in relations that are already asymmetric

5.7 Technopolitical Regimes and their Emergent Sociomaterialities

There is a tendency to theorise the state, particularly in the global South, as a monolith, but the analysis in the last two chapters demonstrates how different sociotechnical

imaginaries emerge with the arrival of new regimes (Hansen and Stepputat, 2001; Mkandawire, 2015, 2001). By 2002, any overarching debate about inclusion into the capitalist global economy is moot. The Kibaki regime therefore combines its aspiration for technoscientific industrialisation with attracting and creating enabling environments for global corporations to anchor some of that industry (Grosfoguel, 1996; Mbembe, 2016b; Mkandawire, 2001; Ravindran, 2019). This reflects some alignment with the taken-for-granted, deterministic aspiration to technoscientific modernity whose hegemonic elements have become less obvious (Bourdieu and Eagleton, 1992; Bourdieu and Wacquant, 1999; C. Katz, 2004; Mbembe, 2017; Thrift, 2005). The regime differs on the matter of the role of the state, on this subject the regime exhibits resistance, like the Moi regime. “The ‘international’ has become more intrusive, so that the scope of ‘matters which are essentially within the domestic jurisdiction of any state’—to use the language of Article 2(7) of the UN Charter—has steadily shrunk.” (Rao, 2010, p 35).

The Kibaki government’s Vision 2030 is a roadmap that relies on this generalised discourse about the new governmentality. Competitive advantage and other economic theories associated developed to explain phenomena in EuroAmerican settings, are extended as blueprints for development for other locales. The influence of discourses like triple helix, knowledge economy and global competitiveness on Kenya’s ICT governance regimes is facilitated by the structure of global knowledge systems, where knowledge generated about the West can be characterised as universal. Even though the legitimation of these discourses occurs in Euro-American knowledge production

and policy arenas, local actors are also susceptible to adopting them. The argument here is not that the national mechanism of the state is preferred to the internationalist system. Rather it is to point the inherent contradiction of empowering people by reducing their agency. If the aim is to produce situationally relevant arenas of development actors should be able to imagine and develop their own imaginaries, expectations, narratives, markets and ideations of progress.

Even though the Kibaki government's vision for Konza technopolis and Digital Villages does not materialise as expected, relatively inexpensive, good connectivity is a factor in inducing a flurry of many typologies of economization of the internet.

> I would beg to differ (and government can speak for itself) that we are putting all eggs in one basket. BPO is but one sub-sector in the ICT arena. Many other sub-sectors within the sector are quite active. Software development is coming up and I keep reading debates on KICTANET. There is an interest. Content development is also being encouraged. The telecommunications sector is busy preparing for real competition and we the consumers can't wait for the benefits, they will have to have great value adds and affordable pricing. (Odera, 2008)

A different set of technological expectations, linked to digital entrepreneurship begins to emerge. The cables might not have established Kenya as a BPO hub, but it generate increased activity in the economisation of the internet and related services. These activities are informed by their own set of discourses, also related to the knowledge economy but this time directed at the role of the individual, rather than of the state. Chapter 6 goes into greater depth demonstrating as this chapter has, the interaction of local actors and these global discourses within post-colonial context.

Despite the vision of a reduced role for the state, the success of M-Pesa and Safaricom is illustrative of its importance in an arena of development. In later years, Safaricom, the dominant market leader. Without any laws restricting its entry into the Banking realm, Safaricom is able to establish a dominant role in Kenya's banking sector. This has may benefits, but because it is not a bank it is not regulated like one and this is often the source of dispute in the industry. Researchers have also reflected on Safaricom's commercial nationalism and the fact that it 'sees like a state' (Park & Donovan, 2016).[13] Safaricom has always touted its 'home-grown' credentials. Credentials that are rooted inon its connections to the state (Park and Donovan, 2016). Safaricom's is a former public-sector agency. Previous discussions have pointed to how long it took to reset the mind-set at the regulatory organisation that devolved out of KPTC. When KPTC is split into various some of the underlying public sector ethos,

[13] The previous chapter noted the edge that Safaricom had over its competitor, as a former government parastatal. The regulator, the Communications Authority (CA), and Safaricom had been part of the same organisation, it is not a surprise that that relationship would provide Safaricom with some leeway in murky regulatory waters. Its services like M-Pesa and M-Shwari meant that it operated like a bank, a proposition that had no precedent in the rules. The fact that it was able to successfully negotiate with CA and the Central Bank of Kenya was due to its identity as a former insider institution. Contrast with the initial designation of VOIP services as illegal because there was no legislation to oversee the provision of these services.

objective and processes are difficult to purge. Its staff go from being civil service personnel in a public sector monopoly to operating in a liberalised market. When the management stake is sold to Vodacom, Safaricom, still benefits from its local awareness and government links. The combination of this attribute and a profit motive makes it successful. Safaricom staff and those at the CCK worked together whether they were at KPTC, so it is not a surprise that the government is reluctant to curb its activity. Safaricom inadvertently illustrates the co-option of the state by the private sector and the outcome this may have in terms of regulation. In time, perhaps has the personal ties weaken with the entry of new staff, and the CCK matures in its role, Safaricom and the government develop an antagonism over its monopoly practices (Hussein, 2015g, 2015h; meshack, 2015b; mse, 2015). These days Safaricom is regarded as a powerful, private sector conglomerate, even having frequent clashes with CA (formerly CCK) over pricing and its conduct in the market. Actors in the digital entrepreneurship space steer clear of interaction with the behemoth.

These days Safaricom is seen as a powerful, private sector conglomerate, even having frequent clashes with CA (formerly CCK) over pricing and its conduct in the market. Actors in the digital entrepreneurship space steer clear of interaction with the behemoth. Start-ups and large companies alike, for example Cellulants fouder, have found that Safaricom will slowly increase their share of the revenues and even develop a competing service, as happened to Equity Bank and Kopo Kopo. During meetings with a potential investor the firm where I was conducting an ethnography was whether their product would need or compete with Safaricom, because that would have been a

guaranteed deal breaker. Thus, even though the ability to use M-Pesa as a payment gateway filled a gap for local digital entrepreneurs and laid down an important infrastructure for the development of a platform economy, the power of Safaricom also constrained activity to areas that are outside its scope. Given the importance of M-Pesa to Kenya, the fact that it is in the hands of a monopoly makes inclusivity much more sinister.

The year 2013 ushers in a new government led by President Uhuru Kenyatta. The genealogy of this new government links it to the preceding regimes, for instance, President Kenyatta and his Deputy are both former proteges of President Moi. Yet, this new set of actors have their own agenda and interest in contrasting themselves from predecessors. During the presidential campaign, the Kenyatta teambrands itself as 'digital' seeking to convey modernity and a complete switch from the old guard who had been Kenya's technocratic elite since independence. In fact, their perspective on innovation and entrepreneurship does not deviate very much from the Kibaki Vision 2030. It placed greater emphasis on digital literacy, and less on large digital infrastructure projects, emphasises entrepreneurship and takes eGoverment much more seriously. The Digital Villages' Pasha Centres are converted into an eGovernment project—Huduma (Service) Centres. New strategies are empowered by the status conferred to them by the authority of the state, and those that lose their momentum, do so because they have fallen out of favour. Konza City loses its champions, while the Ajira programme (employment in Kiswahili) a programme that aims to create pool is of digital knowledge workers is introduced. Ajira's motto is

‘Online work is work’ and generates messages that extol ‘self-employment’, rather than ‘entrepreneurship’.

> Ajira Digital: An online worker is a self-employed person who uses the internet to find, complete and submit work #GoKDELIVERS #AjiraDigital [16 July 2017, Tweet]
>
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>
> Ajira Digital: @ajiradigital programme has transformed lives of many youth in our nation, many have secured online jobs after enrolling [16 July 2017, Tweet]

The start-up culture valorised by popular media, has made it aspirational to primarily urban populations around the world. Perhaps these labour markets will shift to Africa. The vision of Kenya as an ITES-BPO centre leads to investment in the physical infrastructures that would facilitate to the existence of Silicon Savannah, arena of development. A member of *Skunkworks*, a meetup group for IT professionals, who travels to the coast of Kenya to witness the arrival of the TEAMS cable writes in an email:

> I saw the boats coming. I am hoping it is a sign of a new Kenya. It is up to us now. [Email, June 12, 2009]

The message conveys that some actors see the arrival of the cables as a shift in responsibility. The next chapter switches from the interaction of macro-scale actors and technology and development discourses and those of micro-scale entrepreneurs and related discourses. The analysis continues to reveal how these interactions produce sociomaterial outcomes.

6 SOCIOMATERIALITIES OF SILICON SAVANNAH: REPRODUCING KNOWLEDGE ECONOMY DISCOURSES

Narrative infrastructure is “the ‘rails’ along which multi-actor and multi-level processes gain thrust and direction” (Deuten and Rip, 2000, p 74). This thesis adds the dimension of time to illustrate how narrative infrastructures and the sociomaterial environments that they shape co-evolve. Previous chapters’ analyses focus on macro-level actors in the past. The next two shift the analyses to the present time period and to micro-level actors and rely much more significantly on ethnography. The Silicon Savannah arena of development has emerged. This chapter examines its origins and how they have been shaped global power geometry and coloniality. There is a tendency towards convergence around a particular figuration of digital enterprise that associates it with new ventures, start-up culture and the globalisation of products and services (Davidson and Vaast, 2010; Katila et al., 2017; Nambisan, 2016). Silicon Valley’s arena of development has been interpreted as a methodology and codified and institutionalised for consumption (Avle et al., 2017).

> The increasingly intimate connection between the urban, the capitalist extraction of value and entrepreneurial forms of life is certainly a defining feature of the latest round of knowledge-based economisation. The capability of the new start-up entrepreneurs to commodify digital formats and contents – a kind of copyright economy based on the Internet – as successful businesses, and the associated shift from ‘mere technology’ to ‘content’ is thus almost invariably associated with the

> urban. In such a view, the new, economically profitable ideas arise from a cooperative and culturally and socially rich urban fabric. In these urbanophile imaginaries, lively urban environments are said to contribute fundamentally to the production of a new generation of innovative entrepreneurs, essential to the operation of the knowledge-intensive form of capitalism (Moisio and Rossi, 2019, p 535)

Moisio and Rossi (2019) capture the essence of the imaginary of arenas of development modelled after Silicon Valley. The rhetorics associated with digital entrepreneurship and the start-up imaginary have developed a coherence that has been codified and bureaucratised. This is also true of the word entrepreneur more generally—it conjures up a particular archetype that orginates in Western norms and contexts (Trulsson, 1997). Silicon Savannah is a heterogenous arena that is constituted by various linked ecologies (Abbott, 2005). Nevertheless, it exhibits a cohesiveness that emerges out of shared norms and objectives and generates "a local, fragile and yet pertinent coherence" (Mol, 2008, p 8). Discourses and logics are produced by individuals who relate with one another and have ideas about shared values and individual identities (Bévort and Suddaby, 2016; Thomson and Jones, 2017). This discursive element includes the narrative infrastructures and rhetorical activities that create arenas of expectation. Thus, a heterogeneous arena can be bound by shared aspirations.

Connectivity and digital technologies have opened up opportunities for new kinds of entrepreneurial livelihoods to develop. Even though enactments of digital entrepreneurship are heterogeneous and multifarious (Dy, 2017; Dy et al., 2018;

Ngoasong, 2018; Welter, 2011), the discourse, imaginary and supporting infrastructures focus on the high-value, digital technologies. In fact, the word 'tech', not only conjures up a particular sociomaterial environment, it is also short-hand for a particular form of global capitalism. In this arena, the promises that are made by enactors are not only about the technological capabilities of a product, but also about its use cases and commercial value. They style their promises and enactments according to the narrative infrastructures established by selectors. In the previous chapter the enactor is the state. Selectors are represented by multinational corporations looking for a BPO destination, and the developmental configuration who together represent a global economic regime. In this chapter enactors are digital entrepreneurs, hub managers, state actors and other interested in the financialisation of Silicon Savannah and. Selectors are investors and donors who provide backing for the arena and individual organisations within it. In this arena, selectors' expectations go beyond the capabilities of the technology and the product creation process. They have expectations regarding how actors 'perform' and 'narrate' technology production. can dominate and actors can unreflexively follow an inappropriate path (Deuten and Rip, 2000). This chapter analyses Silicon Savannah as an outcome of actors' engagement with the dominant knowledge economy master narrative. The title 'Fabricating Silicon Savannah' aims to convey that something is made and produced, but also that this entails making up a façade of performances and narratives that are not reflective of situated realities. Digital economy facades and performative entrepreneurship are outcomes of the coloniality of knowledge that constrains how actors can evidence

themselves and their activities as competent and potentially successful. The primary constraint reflects the locale's ability to shape itself and its narrative versus be shaped by external, but supposedly universal discourses.

The ICT4VC imaginary and its expectations has come to dominate Silicon Savannah. Its logics circumscribe performances and practices in Silicon Savannah Asymmetries related to mobility and geography continue to exist despite expectations about flattening of disparities in digital ecologies. The locale's positionality as a post-colonial geography impacts the expectations of selectors, which reflects the effects of privileging of EuroAmerican sociocultural frameworks. Evidence of this is that cosmopolitan actors are most successful in this arena because the entrepreneurial identities that emerge in Silicon Savannah are reflective of an incentive for convergence towards a particular figuration of the entrepreneur.

Each of the upcoming sections analyses one of the shared norms and objectives, connects them to the dominant discourse of digital entrepreneurship and demonstrates how despite how they might be inappropriate in the Kenyan context, entrepreneurs are at pains to demonstrate competency and alignment. The ability of these norms to develop as infrastructures of legitimation reflects their power (Bourdieu and Eagleton, 1992; Bourdieu and Wacquant, 1999; Diaz-Bone et al., 2008; Suchman, 2011).

6.1 Competing Narratives Infrastructures : ICT4D, ICT4$ versus ICT4VC

When I arrive in Nairobi, a debate is unfolding in the digital entrepreneurship arena. It is framed as social entrepreneurship/ICT4D/"aid tech" versus for-profit/ICT4$/"biashara [business] tech". These categories are ideal for illustrating the two master narratives that have shaped the arena. Some authors describe the ideas, spaces and practices that constitute the sociomaterial environment of digital entrepreneurship as 'methods' of digital entrepreneurship (Avle et al., 2017).

> We construe methods, here, loosely to refer to approaches such as designer and start-up toolkits, how-to guides, events as well as spaces and organizational approaches including, but not limited to, design thinking, start-up weekends, the lean start-up, hackathons, pitch contests, incubators and accelerators, co-working spaces, and many more. While not all of these methods have originated from the Silicon Valley region per se, they are positioned by diverse stakeholders, from governments to entrepreneurs and designers themselves, as the essential tools of a contemporary culture of technology production that the valley has come to represent. (Avle et al., 2017, p 472)

This idea that these are methodologies, rather than norms is pervasive. Silicon Savannah consists of actors, institutions and material cultures interested in the materialisation of the kind of arena described by Avle et al. (2017).

> I mean, there's a way in which there is conviction we have to use all these models because that's how tech startups work. You know, we have to get angel investors, you have to get venture capital you know [Interview, digital entrepreneur, 2015]

While actors in Nairobi call it ICT4$, it is more appropriate to refer to it as ICT4VC. This aspiration for stimulating the interest of selectors/investors is not found only in Nairobi, it is a global phenomenon (Bakker et al., 2011; Katila et al., 2017; Sadowski and Bendor, 2019; Wentland, 2016). The goal of financing is to generate legitimacy and enough capital so that the promise becomes a self-fulfilling prophecy (Pollock and Williams, 2016).

Yet another methodology is that which describes the norms associated with producing innovation that is not high-value. This typology of innovation is preceded by qualifiers like jugaad (Singh and Gubta, 2011) or below-the-radar (Kaplinsky et al., 2009), in order to differentiate it from high-value and often technologically cutting-edge technologies. This arena of development has its own narrative infrastructures. Silicon Savannah has developed a reputation as a hub for this latter methodology. There is an emerging concern that this reputation for developing social good technologies, rather than commercial technologies, exists at the expense of business minded entrepreneurs. Replacing or supplementing the profit motive with the goal of social development produces the arena of social entrepreneurship. Social entrepreneurship is framed as a benevolent capitalism that seeks to 'do good, while doing well'. Since, Nairobi is a developmentalist configuration hub, entrepreneurial actors can access resources availed by proximity—both spatial and ideological—to this configuration of actors and institutions and their agendas. The developmental configuration's overall doctrine is to advocate for the inclusion of nations and individuals into the global economic system. The master narrative of ICT4D is about digital technologies as a means for

reducing inequality. This thesis makes the case that ICT4D and ICT4VC are not as incompatible as they might appear. Actually, the fact that digital entrepreneurship is considered a way to facilitate economic development, means that the aims of social progress and global capitalism as envisioned by international institutions are entwined. This convergence is indicated in NGOs that 'disrupt' development using startup arena language and institutions like labs and accelerators. By eventually comparing a digital enterprise and one that sells solar lamps, I am able to illustrate how two dissimilar products and organisations are shaped by similar discourses and imaginaries.

The director of technology seed fund, *88mph*, said the following to a Reuters reporter in late 2014:

> "From co-founders of Facebook to the biggest tech funds you can find in Silicon Valley, they've all been here to look and they have all gone home shaking their heads, "said Nikolai Barnwell, a Nairobi based director of 88mph, a tech seed fund. (Jorgic, 2014)

Barnwell went on to describe Silicon Savannah as "fluff" and declare that he was relocating his incubator to Lagos. Barnwell, alluded to the fact that Nairobi's technology arena's emphasis on social good i.e. ICT4D, was one of the reasons why it was not a good location for investors (Jorgic, 2014). He explained further in the comment section of a blog post that took his assessment of the arena to task (Wanjiku, 2015).

> When you look at the two markets then yes, Kenya has more NGOs, more pitch competitions, more awards, more grants, more journalists writing stories about

> Silicon Savannah, more of all the stuff I referred to as "fluff" in the interview. I think it's hard to deny this. Nigeria has little of all of this compared to Kenya (Comment, Wanjiku, 2015).

Barnwell's contention is that some arenas of development present a façade of institutions and activities that have no substance behind them. In his opinion, the arenas of development created by the logics of development prolonged the life of firms that would be eliminated in a regular market selection environments.

The mythology of the start-up has an outsize influence, inspiring popular culture as well as economic doctrine. It has even been adopted by international development discourse (Neveling, 2017; Shakya, 2017; Trulsson, 1997; Yusuf et al., 2009). Thus, the technoscientific start-up, a celebrated organisational form that aims to bring new, technoscientific knowledge to market, has been broadly applied to theories of social change and poverty reduction (Foster and Heeks, 2014; Heeks, 2007; Kenny, 2003; Unwin, 2009, 2017, 2013). In practice, just as there are multiple, heterogeneous ways in which actors use digital technologies to produce livelihoods, technological landscapes can be configured in a variety of ways in order to support them.

A critique that contrasts with Barnwell's, but yet resonate with his perspective on the kind of arena of development that has emerged in Kenya, is that of Ory Okolloh, a digital activist and up until this moment, a person seen as a champion for technology entrepreneurship. At a panel at the 2015 Quartz Innovators Summit, Okolloh causes a stir by denouncing the innovation and entrepreneurship narrative:

> I'm concerned about what I see is the fetishization around entrepreneurship in Africa. It's almost like it's the next new liberal thing. Like, don't worry that there's no power because hey, you're going to do solar and innovate around that. Your schools suck, but hey there's this new model of schooling. Your roads are terrible, but hey, Uber works in Nairobi and that's innovation. [….] And the same people who are pushing this entrepreneurship and innovation thing are coming from places where your roads work, your electricity works, your teachers are well paid. (Kuo, 2015)

Okolloh rejects the idea that infrastructural problems, in particular, can be resolved by the private sector or business logic. She is critiquing the liberal, not neoliberal, tendency to eliminate a role for the state, that is not facilitating capitalism. Liberalism is often presented a foil to neoliberal ideology.

> Within the academy, champions of liberal cosmopolitanism have claimed for it an extraordinary emancipatory potential on the basis of its promises of universal inclusion and egalitarianism. But critics have lampooned it as an elitist and even imperial perspective. In the world at large, liberal cosmopolitan discourses have underpinned practices such as humanitarian intervention and economic conditionality that have occasioned much controversy.[45] Supporters justify them as exercises in rescue, liberating vast numbers from the misfortunes of bad governance; critics point to the allegedly devastating consequences of such practices. (Rao, 2010, p 12).

The critique of liberalism identifies as more benevolent that neoliberalism, perhaps, but nevertheless proceeding from the same modernising and ultimately hegemonic assumptions about progress. The liberal 'pro-poor' discourse, redirects responsibility for development from elected governments and the public sector to entrepreneurs (Kaplinsky, 2005, 2000). Barnwell critiques the tendency for Silicon Savannah to

enact this liberalism and act in this public service capacity, rather than focussing on the market as neoliberalism prefers.

In the aftermath of the Barnwell media piece, there are numerous blog posts and think pieces to defend the arena, or to agree with the premise of the arguments. Barnwell is the inadvertent spokesperson for a popular sentiment that ICT4D and its social good aims are having a negative effect on the commercial prospects in Nairobi.

> In Kenyan tech we have two sides - aid tech and biashara [business] tech. It is important that we separate the two [Tweet]
>
> ----
>
> The only way to get the next Facebook of Africa is to stop funding only social enterprises. More viable start-ups = more jobs [Tweet]

A local investor, echoed Barnwell in a blog post, and expressed the myriad ways in which modulation of the arena by the development configuration's agenda was problematic for him.

> This is a very sensitive post as I know it most certainly won't resonate with everyone in Kenya tech ecosystem. […] I am firmly on the same side as Wired's article on this very topic before you start reading- mainly because of the incentives and behaviours for scalable startups it distorts- I am an investor after all. […] Sam saying that many in Kenya don't have the deep pockets that westerners have and hence rely on NGO money to get going is dangerous, is the wrong lens- there should be a deeper question as to is this a project, job or startup. In Kenya it is better to say you have a contract with USAID than it is that you have money in the bank from your uncle to shoot for the moon- the former is NOT a startup. [….] he low failure rate of startups that attract donor money should give you pause- many startups SHOULD fail but don't. Yes, donor money might be propping up

> startups- this should not be surprising as Government and donor money is not necessarily market driven- Silicon Valley is largely market driven. […] When someone tells me "wow, you are in the centre of the African tech scene in Nairobi!"– I always reply "It is also the centre of the African NGO/donor scene". That is the reality. My job is hence harder than when I go to South Africa and Nigeria given the competing narrative. And this Deloitte private equity confidence survey agrees. I also think those who can harness the positives of donor/NGO money and also fundraise from serious investors are at a serious advantage, in our portfolio it's Eneza Education. We are running our VC course end of July 2014 with our South Africa friends and the University of Cape Town Business School along with sponsors/donors to help start-ups raise serious money. I can play it both ways too if it helps with scaling start-ups, not just the "scene". (Alliy, 2014b)

This post has a lot of information to unpack. An important point explored in great detail in the rest of this thesis is the idea that only certain kinds of finance is available to digital startups in Nairobi—the donor agency grant—and why this might be case. Alliy believes that these grants allow startups to survive, when they should not. This, however, is the purpose of startup funds, afterall. They are provided to keep fledgling companies operational until they start to generate revenues. Alliy indicates that in his opinion the best firms to tap into these donor funds while also attracting venture funds. It seems that it is the source of the funds rather that is most at issue. This is also indicated by the statement that it is preferable to have a business that is surviving on a bank loan or on the beneficence of a rich uncle. This post provides an indication that the imaginary of digital entrepreneurship is that it is enacted by affluent actors. Sam, the founder and manager of the startup incubation hub, Nailab appears to be making the argument that many local entrepreneurs rely on donor grants out of necessity. A

final observation is that other global actors—Wired and Deloitte—have been understood as agreeing with the assessment the assessment of Nairobi.

One could argue that given the level of economic development, market signals that Barnwell and Alliy think should operate in the selection environment would likely indicate a lack of willingness-to-pay for digital technologies. An interview subject provides a different, specific reasons for why the rationales and incentives of ICT4D are not good for business:

> […] you get guys who are trying to solve problems, some very specific problems in given communities. So very localized solutions. That could be part of the reason you have real scaling problems; you just over-customize your solution to just this group of guys, just dairy farmers, you know, and then everyone is complaining I am unable to scale. One of the reasons is [that] there is no money. [Another] of the reasons is the design of your solution, because there are IT or so called technology solutions that have scaled and MPesa is one of them. They scaled, you know, like, why can't the rest of the stuff scale. I mean just look at what those guys did, try and learn from it and then replicate it. [Interview, Entrepreneur]

According to the respondent, over-customised solutions should be redesigned in order to cater to wider markets. This argument relates to the perspective that entrepreneurs should not be resolving social problems as a public service.

Alliy, in the same blog post, explains the different categories of digital enterprise and confirms that the socioeconomic status of an entrepreneur will determine whether they are able to participate in 'high growth ventures':

> Reminder on startups definitions from our investment thesis part 1:

> **Survival Entrepreneurship**: In Africa's high unemployment market characterized by low skilled informal/semi formal businesses- impact investors, many with experience in microfinance or financial inclusion, target these entrepreneurs in their mission to help communities climb out of poverty and earn a sustainable income. If not the entrepreneurs directly, they target the base of the pyramid as customers for the startups for basic services like water, solar lighting etc…
>
> **Lifestyle Business**: Business of up to 5-25 employees with founders wanting to control their destiny, often the business can be a family one. This is actually a dominant form of entrepreneurship in Africa and around the world, there are very few Zuckerbergs…
>
> **High Growth Venture**: Typically characterized by a founder with a bold vision, highly skilled technical ability, willing to take a big risk and willing to bring on partners (inc. investors, strong cofounders) to make their mission a reality. (Alliy, 2014b)

The first two categories of business in Alliy's framework do not produce the desired promissory environments. I would characterise them as ICT4$, while the last is ICT4VC. The arenas of development from which the ICT4VC model emerges have firms that eventually grow into behemoth, profit-making corporations from fledgling companies. This is seen as evidence of the validity of this approach. An approach that shelters selected firms from the vagaries of the market by the injection of large amounts of capital The reasoning is that their eventual commercial success is reflective of their ability to accurately impute societies' needs and conduct high cost technoscientific research and development. This has led to the proliferation of arenas of development that exist to attract the interest of high-value investors—ICT for venture capital (ICT4VC).

Alliy (2014) indicates in his blog that a variety of business adopt the start-up entrepreneur narrative even when this may not be reflective of their status. Even though they are cast as opposite and different, the selectors in ICT4D and ICT4VC are rooted in modernising rationales based on EuroAmerican modes of existence (Escobar, 1995; C. Katz, 2004; Latour, 2007; Meinhof, 2018; Ndlovu-Gatsheni, 2018; Suchman, 2011; Wallerstein, 1995). An external gaze shapes the structure of Silicon Savannah and its practices and forecloses on alternative imaginaries and sociomaterialities. This means that even within Silicon Savannah, the legitimators are actors whose primary attribute is proximity to Western modality (Anderson, 2009; Bourdieu and Wacquant, 1999; Latour, 2007; Meinhof, 2018; Suchman, 2011) (see section 6.4). Alliy's, for instance, aside from being an investor, describes his positionality as "a global/local one- but more a pan African view as will become clear as you read on (should you need reminding, I am East African from Tanzania that spent time abroad in UK and Silicon Valley- but Africa is my home.)". The actors who can thrive in an arena where ICT4VC informs the criteria for success embody particular attributes and social positionalities. It is an arena where socioeconomic class plays a role in deciding who can participate. As Alliy indicates in the blog post, entrepreneurs who are independently wealthy, or who have kin that can support their entrepreneurial efforts, are more likely to have a smoother entry into business, irrespective of the arena. Credentialed elites have a much easier time of signalling that they represent competency and a pathway to returns on investment to financiers.

6.2 Settings and Locations for Action

The sociomaterialities i.e. organisations, physical spaces, norms, relations and activities produced by actors interested in manifesting an arena of development reveals the discourses and imaginaries that are shaping the locale.I spent early days of fieldwork conducting participant observation at the Bishop Magua building on Ng'ong road. This location is the unofficial headquarters of Silicon Savannah because it houses the iHub. There are other spaces dedicated to incubating digital entrepreneurship like Gearbox, Nailab but it is fair to say that these are located here because this is where the iHub is based. Since iHub was set up in March, 2010, it has come to be representative of 'Silicon Savannah' and is often the first stop for anyone in search of the arena.

> It's an open space for the technologists, investors, tech companies and hackers in the area. This space is a tech community facility with a focus on young entrepreneurs, web and mobile phone programmers and designers. It is part open community workspace (co-working), part vector for investors and VCs and part incubator. (Colaco, 2010)

As the author notes, incubators and co-working spaces like the iHub is envisioned as bringing various enactors and selectors together. It is a spacious, well-lit room with comfortable chairs, a coffee kiosk and free WiFi. In terms of physical spaces, the development arena follows well-established tropes: open-plan, co-working spaces with free wi-fi and coffee shops, inhabited by casually dressed young people (Katila et al., 2017; Moisio and Rossi, 2019). The iHub acted as a nexus for various actors in the community has proved invaluable. iHub is not simply a totem, it performed a task.

[…] the iHub has a very specific role within the ecosystem and there is a way in which you also cannot replicate what iHub has done for this sector. They've given innovation an image. I remember the last time probably I think one of my biggest questions with the [iHub] was the sustainability, how will they sustain themselves because the question is whether the iHub is a natural construction of the ecosystem or it is the result of a systemic problem, you know, and they're just covering something that somebody is not doing. I think the jury is still out there as to what exactly a hub is. If you approach it from the perspective of say innovation systems, primarily sectoral innovation systems—a hub is a place where agents within an innovation system can come and interact. My assumption is that was the aim of the founders of the iHub and they were going to put a place where innovators can meet, financers can meet, the sector can meet, the government can meet, you know, kind of mix them all up […] the hub has become the real agent, the catalyst of innovation because they have driven interaction. And iHub has had that effect, whether intentionally or unintentionally I have no idea, but they've had that effect […]. [Interview, PhD student, serial entrepreneur]

It is difficult to imagine what this physical might be replaced with. Perhaps the interviewee is imagining a time when the ICT4VC industry is well established and deal making and brokerage are replaced with more formal institutions. Even then, spaces like this would need to exist as they represent shared interests and aspirations. In his comments the responded wonders if the iHub was established with convening disparate actors in mind. A a blog post on the iHub indicates it was certainly intentional. An immigrant from the USA joins the technology community and advises them to replicate spaces that are representative of digital arenas of development in USA. There is an emergent, yet disconnected, technology community growing in many of the major African cities. The digital connection happens, primarily through email lists or message boards, and from time-to-time there are local physical meet ups, like the recent surge in BarCamps and other non-traditional meetings. What isn't available is a place to meet that is always available and is made to engage and grow the community. The VC, investor and business communities in Africa are beginning to see the value and need for web and mobile applications and services. At the same time these same

> individuals and organizations have no real avenue for engagement with the distributed and independent developer community. What they need is a hub, a place to go to find the young talent, invest in it, and offer monetary opportunities that re-invest in local technology growth.

These hubs would be tech community facilities in major cities with a focus on young entrepreneurs, web and mobile phone programmers and designers. It is part open community workspace (coworking), part investor and VC hub and part incubator. It is the nexus point for technologists, investors, tech companies and hackers in that area. These hubs are community spaces that are open to all web and mobile phone developers. They are owned and supported by the local tech community and organizations that care about seeing this community grow. (Hersman, 2009)Another blog post written from the point of view of a digital technology developer located in Nairobi, speaks about how this virtual interaction is made manifest in interpersonal relationships and eventually in institutions and physical spaces.

> Erik Hersman inspired the first Barcamp during one of his visits to Kenya. He challenged us that it would be the perfect activity for the Tech Community to undertake. […]Erik pitched me the formal idea of iHub at Java Junction – his temporary living quarters as he worked on moving to Nairobi. The iHub cemented the Tech Community. It has provided a Foundation that has enabled immeasurable growth, taking us from baby steps to giant leaps of progress in Tech in Kenya. The coming years are going to get even more exciting. The mission of the iHub still remains as it was when it started – it's the home of the Tech community in Kenya. (Kariuki, 2015)

The iHub is a catalyst for translating relationships between actors into the design and production of technological artefacts and enterprises. Several interviewees spoke

about not having ideas for platform technologies, but no technical skills and therefore going to iHub specifically to cultivate relationships with technologists. Technologists in turn, spoke of going to hang out at iHub in order to develop partnerships with potential financers, and find development work.

An important attribute of these sites is that they are the sites at which social learning takes place. Information about how to enact digital entrepreneurship is "[...] composed of the following key elements: cognitive schemas, normative expectations, and material practices" (Jones et al., 2013, p 52). They are transmitted through tacit and subliminal means—the media, social learning and formal education. The norms culture, rules, language and practices of digital entrepreneurship are transmitted in these places (Avle et al., 2017).

The blog post below charts the origins of the iHub. In the imaginary for these spaces, Herman also indicates the extent of the influence of Silicon Valley:

> It primarily operates off of a micro-VC model (a la Y Combinator) whereby approved entrepreneurs are given support for 3-6 months of work to create and launch their product or service. In that time, they are also given the chance to pitch the completed product to other investors, and are given support on business, licensing and legal issues. It is where the young and old, new and experienced developers can go to hang out, learn from each other and work on joint projects. There is a real focus on making this open and available at those odd hours which hackers are prone to want to work in. It has a free high-speed internet connection, electricity, and an upbeat and fun environment to work in. It is where the local tech guys and user groups do their monthly and weekly meetings. It is a coworking space, where freelance developers and designers can rent space

> (daily/weekly/monthly) and share common meeting rooms for business meetings. They are provided with spacious desks, high-speed internet access, conference rooms, a kitchen, unlimited network printing and faxing, couches and lounging area. It isn't just a business.

As the arena develops many similar business accelerator/incubator entities begin to dot Nairobi's technology landscape promising entrepreneurs that they can support their development. The probity of these activities and promises is part of what is being called into question by naysayers like Barnwell.

The iHub, and other incubator, co-working spaces rely on the ICT4D infrastructure to fund their activities, and were therefore shaped by their interests and priorities.

> The end goal of the Innovation Hub in Nairobi is not to make money and be more profitable. Instead, it is to grow a stronger technology community in African cities, one where developers, designers, VCs and businesses are all better connected and mutually benefiting from the growth. It isn't a place for an outside sponsor to slap their brand on and call their own. This *steals ownership* from the local tech community and defeats the purpose of the facility. (Hersman, 2009)

Although actors representing organisations such as business accelerators and firms interested in attracting venture financing feel that the existence of development financiers or donors distorts the selection environment. Development donors and philanthropic interests have been critical in the establishment of these spaces.

> […]Investors who would rarely invest in people they have not met, and not just once. Of course if an investor from the Netherlands is coming to meet a

prospective investee in Kenya, they would be happier combining the trip to meet many other potential investees - better still if they are found in the same vicinity. And if startups and venture capital are not your cup of coffee, perhaps corporate deals and partnerships interest you. In this case I would suggest that if you can meet all possible partners within the same location, that helps much. This kind of arranged coincidence that a shared physical infrastructure creates is what contributes to the requisite density of certain classes of industry players necessary for a thriving ecosystem.

6.3 iHub itself becomes representative of the shift towards more commercial orientation in the arena. An interview subject queries how the iHub could remain sustainable. This is a question about whether the need it serves will eventually be catered to by other sociomaterialities and also about whether donor financing can be relied upon, in perpetuity. Eventually, ownership of iHub is transferred to a group of investors who include Professor Ndemo and who aim to manage it as a for-profit. Mobilities of the Digital Knowledge Economy

The figuration of Silicon Valley as site of globalisation is one of its key attributes (Carver, 2010; Saxenian, 2006). Globalisation's utopian narrative is one that frames the world as accessible to all people who have achieved a certain measure of worldliness. One of the narratives of the knowledge economy is that they flourish when they allow intercultural exchange. This is backed by scholarship on the influence on immigrants on Silicon Valley (Saxenian, 1994) and the impact of on bilateral actors known as 'argonauts' or returnees who travel between Silicon Valley and home nations on those countries' arenas of development (Saxenian, 2006). Migration has indeed shaped Silicon Savannah. The difference is that immigrants are travelling from

developed countries, which means they have a different status than migrants from developing countries to developed countries. This kind of immigration often also represents flows of capital. While migrants from developing countries to developed countries may also be wealthy and represent elites, this is not the narrative that is ascribed to this flow when it comes to the knowledge economy discourse. What is evidenced in scholarship is that they are seen as elites when they return.

A contestation over work permits for migrant knowledge workers provides a backdrop for this discussion. Hersman (2014) writes a blog post that reflects on the relocation of people as labour, rather than as proxies for capital (Kelly, 2012; Rutvica Andrijasevic and Devi Sacchetto, 2016):

> Say you are a Kenyan web designer living in Seattle, do you think anyone cares that you came from Kenya? No, they only care that you are a great web designer. If you're an American programmer working in Nairobi, does anyone care that you come from the US? Yes, for some reason that matters. You're judged on where you come from as well as your skill set. […] Americans, Europeans, etc. want to work in Kenya and be part of a growing melting pot of engineers, web designer and entrepreneurs trying to build out the next great tech economy. It's a grand dream, and one that we should all support if we want Kenya to be on the global map. […]What we need to realize locally is that in the tech world there are very few borders, that we're automatically in a global playing field. There needs to be

> lighter rules for immigration of expats (from anywhere) who are willing to bring investment and talent into the country, and keep it here. (Hersman, 2014][14]

Hersman (2014) does not acknowledge asymmetries in labour mobility and hiring practices and ends up equating labour and capital, in order to make a point about Kenya's restrictive labour and immigration laws. EuroAmerica immigrants are likely on average to be more affluent than local actors, and perhaps able to take on the role of investor—however the crux of the argument is that labour associated with digital technologies should be able to move freely. The excerpt from Hersman's blog indicates the aspiration of digital entrepreneurs to place Nairobi "on the global map", which reflects an age-old understanding of what modernity represents and the places that are included in it (Nkwi, 2015; Nyamnjoh). Nairobi, is technically already on the global map, what is generally meant by this phrasing is that it should become less non-modern more cosmopolitan (see Section 6.2).

This inability to cognize power asymmetry, or to take-it-for-granted is a privilege. During the debate over work permits in the digital arena, Ory Okolloh Mwangi

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[14] Hersman is not the only Western ICT professional to move to Kenya, but he is the most prominent by reputation and level of activity—a pillar of Silicon Savannah through the iHub and Ushahidi and an eventual channel for resources, therefore a gatekeeper.

(@kenyanpundit), like Hersman, a founder of Ushahidi/iHubpresented on Twitter, the aymmetries in mobility between geographies.

> Nairobi is a hotbed[15] of expatriates. (Ory Okolloh Mwangi, 2015a)
> All these Westerners finding "opportunity" and relaxing in "dangerous" Nairobi, while we get humiliated at their embassies (Ory Okolloh Mwangi, 2015b)
> How many Africans can get H1-Bs[16] to build start-ups to solve US social problems? (Ory Okolloh Mwangi, 2015c)

Borderless tech worlds are an imaginary that hasno basis in objective reality. The assertion in the excerpt that "in the tech world there are very few borders" does not stand up to scrutiny. The more accurate statement is found later in the blog, when Hersmans statesthat "all things are not created equal". The borders and strictures that exist in the offline world are palpable in the virtual world.

The argument presented to those who complain about this asymmetry and is indicated in the responses to Okolloh-Mwangi's post is that Kenya needs to attract 'global talent' and affluent like the United States do not. The taken for granted rationale is that since some geographies are a source of desirable global and globalising talent, the one-way traffic ought to be anticipated and celebrated. An argument which is evidence of the

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[15] A reference and call back to the slight by CNN that referred to Kenya a 'hotbed of terror'.

[16] US work permit

coloniality of knowledge. Further evidence of this coloniality of knowledge is the regard in which Western educated Kenyans are held. Okolloh-Mwangi, is a so-called 'returnee'. Having been educated abroad and worked for Google, she relocated to Kenya and became a prominent actor in the digital technology arena. This makes her aware of the unevenness of the playing field when it comes to mobility.

In talking to immigrants and returnees, I found that migration produced its own narrative genre. Frontier tales were aspirational, largely optimistic but also filled with the overcoming of hardship.

> The really geeky, explanation which is true is I was inspired by the Rothschild family in Germany, in the 1800s. […] So obviously I am not the Rothschilds and I did not have to leave freedom because I was persecuted but I was thinking, that was the first sign of globalisation…it was a real move towards globalisation. He wasn't the only one, many people did this but it's interesting and what we are seeing now is a globalisation that will include Africa and the opportunities and potentials here and I want to be there. So, then I took a map of Africa and I looked at West Africa, East Africa and South Africa, which is maybe too generalising but still some sort of a way to classify it. West Africa is Nigeria basically, and a bit of Ghana, and the rest is not really happening. It's happening but I don't speak French so it would be Ghana or Nigeria, I don't know how to do business is Nigeria, it's an interesting place but challenging. South Africa is at a standstill or even regressing, structurally they have issues, not just racism but the deep-rooted corruption that has to come life there in the wake of Mandela, really unfortunate. And also I am of the wrong skin colour so if I go there I am not going to find a job. If I was Zimbabwean, I would have the same problem, you know, it's for South Africans. I can get that, but it is a little bit challenging to know that. Then I looked at East Africa, where I had travelled quite a lot and worked a bit with private sector development and I just find this place […]. So that's the geeky

> explanation, I actually took a map and said, 'where do we move?' [Interview, Founder, LightUp]

Not everyone is socioeconomically capable of cognizing Nairobi as a land of milk and honey. The migrant has discretion over his own relocation and that of his family, but has no power over the structural factors that enable his relocation. The ability not only to be able to move, but to be able to choose where, and to do so while not under duress, is a privilege. Returnees also have this privilege, even though it is bounded by their citizenship.

The founders of Moola all lived in developed countries for a number of years after obtaining university educations there. One had studied in Australia, which is notoriously difficult to settle in, therefore he had come back after his undergraduate degree. The other two had obtained US citizenship and could come and go between the two places as they pleased. They were what Saxenian (2007) would refer to as an 'argonauts'—skilled economic migrants who move between the US and peripheral nations. Like, LightUp's Swedish founder, their entrepreneurial narratives are rooted in 'Africa rising', new frontiers and digital utopianism. One Moola founder recognised that setting up Moola was an opportunity that was not available to him, as a young, black man in the Silicon Valley development arena:

> I will also say, there's nowhere else in the world that anyone can literally…our age specifically, can have an idea, say we are going to do it and just do it, even if it is a struggle. There's not any other place in the world where young people of chocolate colour can come up this far. If we were in Silicon Valley, this would not be happening. We would have to work for all these shitty companies for 20/30

> years, build up a name then people will give you money, if you have an idea. [Interview, Founder, Moola]

Scholarship and statistics on start-up investment in Silicon Valley suggest that Mwangi is correct (Pager and Western, 2012; Prasad and Qureshi, 2017; Quillian et al., 2017). Mwangi is also correct because in Kenya, he is now in a position of relative privilege as a returnee. However, the asymmetries that exist in the American digital entrepreneurship arena are also palpable in Kenya (see Chapter 7). A digital entrepreneurship that is modelled after Silicon Valley is definitely not egalitarian, and is in fact structured by colonial modality (Suchman, 2011).

6.4 Cosmopolitan Gatekeeper Legitimators

The tendency to privilege EuroAmericans norms is indicated in the status of returnees and immigrants from developed countries in the arena. They are often the local legitimators. In their association with modernity they represent its proxies and exemplars of the global citizen. Innovation and entrepreneurship discourse describes the importance of actors who can travel between geographies (Saxenian, 2006).Their value emerges from their ability to inhabit different sociocultural arenas. In the literature, returnees and immigrants are valued for their knowledge and networks. Saxenian (2006) refers to returnees as 'new argonauts' who are participating in 'brain circulation' (rather than 'brain drain'). From another perspective, they are actors who have returned with a greater familiarity with a particular mode of existence which they have been trained to view as universal. 'Cosmopolitan' identity is a useful concept for

encompassing these attributes. Rao (2010) distinguishes between normative and empirical-analytical definitions of the term, but I find both to be useful:

> […] normative cosmopolitanism is a moral view of how relations between all human beings ought to be ordered, empirical–analytic cosmopolitanism describes the cross-border ontologies that are brought into being by all manner of human activity—conquest and commerce being perhaps the most significant. […]'Cosmopolitanism' in this sense refers to the potentially infinite 'ways of living at home abroad or abroad at home'[29] that have developed as a result of human migration and the global circulatory networks of goods and ideas that have developed in conjunction with these movements. (p 11)

This study is concerned with the impacts of normative discourse so it is valuable to understand how the standard perspective of this term operates in the world, as well as its analytical utility. Particularly since, this section elaborates on how a network of Kenyans who connected virtually while in the global diaspora come to be the ones architects of the narrative of Silicon Savannah. Since many of the entities and institutions associated with the start up space in Silicon Savannah—iHub, m:lab, BRCK, eLimu, Pivot East, Savannah Fund—are affiliated with the same core group KBW/Ushahidi group and financed through their networks meant that they come to be seen as gatekeepers.

> There is an emergent, yet disconnected, technology community growing in many of the major African cities. The digital connection happens, primarily through email lists or message boards, and from time-to-time there are local physical meet ups (Hersman, 2009).

The Kenya Blog Web Ring (KBW) was a virtual community of bloggers with Kenya links (Wangari, 2014). Members of the Kenya Blog Webring went on to establish iHub, Ushahidi, and Savannah Fund. These are all organisations with global visibility and can therefore legitimise other actors in the arena.Through their blog posts one can chart the trajectories of KBW returnees as they make their way back to Kenya. These textual sources also narrate how their individual career/livelihood decisions becomes entwined with the narrative of Silicon Savannah.

> Any discussions about the rise and future of online communities in Africa will be incomplete without mentioning Kenya Unlimited, the home of the Kenyan Blogs Webring (KBW) and Kenyan blogs aggregator. KBW turned three years last month. Since its birth, KBW has been able to bring to a global audience gigabytes of voices, opinions, news, knowledge and debates from the Kenyan blogosphere. (Ndesanjo, 2007)

Academic research has demonstrated that relationships developed on digital platforms are not superficial (Baym, 2015), and the KBW is a case in point. Their sociality may have been mediated through blogs, but they developed a kinship. These relationships then materialised and are represented in variety of organisations and physical spaces, that are products of these relationships, converting their virtual network into a sociomaterial reality.

> The iHub turns 5 this month. It’s been a fast journey, and now most of the memories are a blur. We don’t even remember what it felt like to be in Nairobi at a time when there was no Tech Community. When the most techies communicated was to exchange Redhat Linux CDs. When a young computer science college graduate’s first dream was to work for an accounting firm like

> PWC. When Developers, Entrepreneurs and Techies were not celebrated, and didn't have a voice. All of us Angani founders, have a deeply rooted involvement in the community. We actually all met & got to know each other through volunteering and helping out in the community. Today Angani exists because of Skunkworks, because of Barcamps, and because of the iHub […] . (Kariuki, 2015, p. 5)

There was a sense that the digital entrepreneurship space had been dominated by actors from more cosmopolitan and well-off socioeconomic backgrounds—returnees and immigrant entrepreneurs, and more of a local perspective was needed in the arenas guides.

> I feel like people have awoken to the fact that we are bigger than one or two gatekeepers. Unfortunately, it just creates new gatekeepers but the gatekeepers would be locals. There's, similar to politics, it will probably still be the Ushahidi/iHub crowd just the native Kenyans who will spring up. So you'll have the Orys become the new gatekeepers of what's happening in Kenyan tech. So when I say Kenya and raising capital, most people still go back to iHub. So if the iHub crowd does not known about you or they don't feel your vibes or you don't like them, then money tends to be hard to come your way. Or even if you go out there and you find some guy who is lucky enough to meet you, or whatever, you are lucky enough to meet them, the only people they will know here who can give them an independent, in quotes, reference about you would be the iHub crowd. So it goes back to that thing of who you know id very important, but I think if over time if people can just find a way to make information transparent, like, here are all the start-ups, this is what they are doing. [Interview, Entrepreneur]

The perspective that that Western educated actors are out of touch is not uncommon. In Swahili, there is a word 'mkengeuko' which is meant to convey that a person has undergone a 'conversion' that makes them less capable of understanding local norms.

There is a view amongst some that returnees and immigrants as “out of touch”. They became too far removed from the context to represent it effectively.

Many of the members of KBW lived abroad. This results in the development of particular outside perspective on Kenya. In their blogs, KBW members often talked about Kenya and its socioeconomic and political trajectory. They adopt the popular neopatrimonialism perspective of developing country states and lament their perceived failures, while indicating a sense that there is an opportunity for them to make a difference because of their education. Technology is often characterised in their blogs as an enabler of the progress that they hope will pervade Kenyan society. This outlook means that they are predisposed to characterising digital technologies as a foil to a neopatrimonial state (Hersman, 2006). This point of view tends to fit within development paradigms and their narrative infrastructures (Hansen and Stepputat, 2001; Mkandawire, 2015). Aligning with the narratives of the developmental configuration enabled one to attract grant funding, and to be recognised by it as a local leader.

Ushahidi, a crisis mapping app developed during Kenya’s contested 2007/2008 election, is a material outcome of this outlook and technological skill sets. The makers of Ushahidi are returnees and immigrants who had all been part of the KBW. Ushahidi has since been deployed around the world to quickly crowd source information about issues as disparate as snowstorms and earthquakes. Ushahidi attracted headlines and philanthropic backing, which at the time raised the social and cultural capital of its

creators and set them up as leaders in the arena. The success of Ushahidi, generates resources and these actors go on to establish many of the organisations like iHub that are most associated with Silicon Savannah, not only in the material sense but with respect to its ethos. An ethos that reflected the cosmopolitanism of its founders and the expectations of beneficence that were thought to be located in the goal of the spread of ICTs. As their role as legitimators of other firms grows, alignment with their perspectives became the means to channel resources to one's endeavours.

Gatekeeping is only problematic if it is negative gatekeeping i.e. rather than blocking unwanted actors and allowing good actors through, it does the opposite. For instance, initially iHub operates as an open space. At some point, there is a feeling amongst its founders that it needs to become a membership organisation in order to prevent the space from becoming "a cyber café" because of the free internet (Interview, Executive Director, Ushahidi). There are no fees attached, but new rules require actors to register and be vetted by an existing member. The idea is that the doors would be manned by someone with an up-to-date members list. This approach is designed to select for legitimacy. The Hub is inadvertently setting standards for legitimation.

Over time, just as happened in KICTANet the differences between them become more apparent one the original problems that brought them together. Towards the end of my fieldwork, there is a controversy over Angani, a cloud hosting start-up. On the day users suddenly find themselves locked out of servers. Soon after, Twitter and the blogs begin to speculate about the organisational infighting that is supposedly the cause of

the disruption. The infighting is between actors who are part of the early cohort that envisions the institutions that characterise Silicon Savannah. Because the Nairobi tech community sees itself as friends they plan a 'town hall' meeting to assess the dispute. The meeting is announced on Twitter. During the meeting to discuss Angani there are many expressions of hesitation about speaking in front of the gatekeepers. It is perhaps a paradox, that people were not afraid to express that they were hesitant. One woman explained that: "The tech space has its owners. By virtue of them having been there from the beginning." With her words she hints at the identities of the gatekeepers—the "Skunkworks mailing list are the guardians". She also alludes to a "fear that you need to be reverent to the powers that be." The parallel conversation occurring on social media using the tag #techroundtable is much less circumspect and confirms that those present are not being as open as they could be. While the gatekeepers might not be selectors, they are certainly legitimators and no one want to fall afoul of them. This however implies that legitimation is not meritocratic and relies on relational dynamics rather than the quality of products or firms.

The exclusivity of the arena is indicated in the following exchange which also highlights the observation I made about digital entrepreneurship as elitist. One of the actors (Actor A) represents a club that provides entrepreneurs with networking opportunities. A subscription for access model limits who can join, and the group and its events are considered exclusive (further illustrating the socioeconomic stratification in the arena). The interlocutor (Actor B) is an individual who feels that the narrative

of Silicon Savannah has been ‘hijacked’ by higher income individuals who have no real awareness of the needs of the vast majority of Kenyans.

A: Every day I get calls and emails requesting "Innovative ideas, good entrepreneurs, and quality start-ups". [19 May, 2016, Tweet]

A: There are things you learn on the start-up grind. Like how to detect BS from far - what people say vs what they mean [19 May, 2016, Tweet]

B: We have labelled ourselves "Silicon Savannah". Now we are trying to live up to the name. We have little to show [19 May, 2016, Tweet]

A: I don't think so. There's a lot that happens in this town - depending on how plugged in you are. There's a lot to show & tell. [19 May, 2016, Tweet]

B: 1. We are not based at a hub 2. A handful know what we working on 3. We raised angel funding $50k from fund [19 May, 2016, Tweet]

A: 1. Not everyone has to start in a hub 2. Not everyone has to go through a programme 3. That doesn't mean they don't work [19 May, 2016, Tweet]

B: then why has Silicon savannah been attached to XY hubs? [19 May, 2016, Tweet]

A: because those 'XY hubs' have done their bit to be a part of the narrative. They talk about their work, show up...preach [19 May, 2016, Tweet]

B: that's [it] right there Product first. Then talking. We OTOH [on the other hand], been talking too much w/ no to few scaled products [19 May, 2016, Tweet]

A: but what's your role in creating scalable products? These places, people and programmes are there to facilitate then you DIY. [19 May, 2016, Tweet]

B: my assessment is these products aren't well thought out from the beginning. To scale in this market. [19 May, 2016, Tweet]

B: and I also think it's b/c of "hijacked by middle class" who can't see past their biases. And forget Kenya is != US [19 May, 2016, Tweet]

B: IMO, the Silicon Savannah narrative was hijacked by the "middle class" and twanging KOT from Ngong road [19 May, 2016, Tweet]

Actor B expressed the sentiment that Silicon Savannah has not lived up to expectations, and the blame on the fact that "the middle class from Ngong road" (where the iHub and other incubators and accelerators are located) are have the highest stature, and act as gatekeepers of the arena. The problem is that they are too Westernised ('twanging' refers to an accent acquired from being based outside the country) to understand the locale.

The returnee blog posts indicate that it is much more complicated that simply having one's Africanness and local knowledge educated out of them. The blog posts serve as a testament to the experience of returnee. That they often are involved a process of reconciling a variety of identities. The blog post below represents the view of Hersman who identifies as a returnee:

> I sit in a strange place, as do many of you who read this blog. We are considered the African first-movers on web technology, the African Digerati if you will. Our insights into technology are not the same as the vast majority of those who live in Africa and our knowledge and perspective of Africa is much different than the rest of the world's. We, currently, are the people on the bridge – maybe even the bridge – that spans the divide of both knowledge and technology when it comes to Africa. So, in our unique position, what do we see? This is what I see: I see young Africans gaining access to technology and connecting to the world at a greater pace than ever before. What happens when you get millions of children on $100 computers? How does that change their world view and affect the way communication happens? I see an Africa on the verge of a technical revolution that leapfrogs years of government corruption and of condescension by the world's developed nations. What happens when the government can't control information or communication? I see people who want to be recognized as more than just the hand-out junkies that their governments make them look like.

> Technology is giving them that voice, and will give them more over the coming years. This begs another question: what happens when the highly educated African diaspora return, or invest? The truth is that the world is changing faster than anyone anticipated. It's changing so fast that the governments of the West can't even keep up. If the governments of the West are hopelessly behind the technology curve, where does that put African governments? Yet change happens without governments. Some would say that great changes happen precisely because governments can't keep up, they can't even understand what is happening. Laws are passed, yet those laws mean nothing because the technology has already moved past them. (Hersman, 2006)

The excerpt illustrates the scepticism of government that I mention earlier on, it also illustrates how startup entrepreneurs see themselves as a vanguard for modernity. This lends credence to the idea that Saxenian's (2006) 'Argonauts' do have an important effect on development arenas. Many of the KBW cohort share the expectations outlined in this excerpt about the ability of ICTs to alleviate the problems associated with the developing country identity. Given their interest in reforms their involvement with the development configuration is therefore not unexpected.

6.5 Knowledge Networks and Schemas of Opportunity and Success

The nature of digital technologies allows for the relatively easy acquisition of practitioner knowledge and skillsets in comparison to other technoscientific domains. The educational attainment and technical skill level of participants in Silicon Savannah is wide ranging—from MIT Computer Science PhDs to self-taught coders.For instance, Pronto CTO is a self-taught programmer who has developed a reputation as one of the best programmers in the arena. The Skunkworks group email archives reveal

that in the early days of Silicon Savannah, technical skills are considered a requirement to gain membership. A more egalitarian approach had been encouraged.

> I don't understand, Steve Jobs wasn't even a developer! He is a designer. He's a guy who just understands aesthetics…then went and worked with 'Woz' who was the technical guy. I feel that there has to be that balance and ecosystem. We are all nerds in our own way. [Interview, Thimba]

There is no balance, however, as the scales are tipped in favour of ICT4VC. Those with ideas and management skills receive more interests that technologists. Digital entrepreneurs in Nairobi (and elsewhere) are often judged on their ability to 'scale-up' their business to other locales. There is a tension between localisation and scaling in product creation. On the one hand, localisation requires a level of specificity in terms of configuring and designing for a user, while scaling demands that the service or product be capable of being utilised by a broader, user base that exists in the future. Indeed, discourses on scaling on the one hand consider the work that technologists have to do to imagine these customers (Campagnolo et al., 2015). The fact that 'global' companies are able to scale is often indicative of the extent to which receiving sites are already primed and socialised to appropriate goods from Western locales. This kind of digital literacy is imbricated with cosmopolitanism. Market research for Pronto's product, ProntoPOS, an inventory management software showed that scaling might be a problem unless a lot of resources went into customer education. The question of widespread digital literacy was often elided in discussions of how scarcity gaps represented opportunity.

In a previous chapter I discuss Safaricom's ability to understand its users' capabilities as a facet of its success. Knowing that many of their customers would not know how to use the M-Pesa service, they create an agent system that enables rapid adoption of their service. A competitor to Safaricom, Kencell, falls by the wayside because it targets the wrong customer segment. Also aware of users' capabilities, they decide to target cosmopolitan, urban users. . Kencell had concluded that in order to make profits it should focus on the segment of the market that had disposable income.

> Remember back in 2000, Kencell, now Zain, was the market leader, but they decided to go for high-profit customers (per minute)[17] while Safaricom went for the low profit customers (per second). Eventually because of Kencell's management and ownership intrigues, Safaricom consolidate its base and moved into higher profits segments, continuously grabbing more market share. Fast forward 10 years later, and Safaricom can sit proudly on its throne as king of the telecoms. (Karanja, 2010)

It is evident from a number of blogs that Silicon Savannah pundits dwell on Kencell's mistakes and Safaricom's innovative capability and user savvy to develop a theory of success. Kencell uses a 'per minute' billing system, while Safaricom charged per

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[17] The author is referring to the billing system for phone calls. Safaricom charged calls by the second, while Kencell charge by the minute. Safaricom seemed to understand that their users would make short calls.

second. Kencell would make more per call, but it lost customers who felt that they were saving by choosing Safaricom. The more people that join Safaricom, the less it makes sense to join Kencell since it is cheaper to make calls to numbers that have the same mobile provider. Safaricom's employees sell its SIM cards at bus stops and matatu stands in dusty rural towns. Kencell focusses on the shopping centres and malls of Nairobi and other towns.

Despite the importance of local awareness and knowledge, information about what knowledge is, what skills are relevant and what constitutes opportunity is generally derived from selectors' knowledge base, and the expectations that they construct from this knowledge (Bakker et al., 2011; Borup et al., 2006; Van Lente, 1993). In the case of digital arenas of development the selectors are investors whose primary knowhow is educated speculation about how the digital economy and technology markets operate (Pollock and Williams, 2016). The rationales are communicated and legitimated in formal education. They are part of the education curricula. Actors assimilate the start-up framework scripts from codified, formal education and through social learning, or "contamination" (as a person that I interacted with put it) through mass media and popular culture. This is partly what incubators, events, and success stories impart—knowledge of the performance of digital entrepreneurship. How to be successful in the ICT4VC system, is the lesson at the core of the heart of these learnings. For those who do not have a formal business education, iHub and other digital startup incubators communicate this information in formal trainings and informal seminars. By restructuring their environments to support the diffusion of this information, actors are

not only attempting to materialise development arenas, they are being socialised into particular cultural practices (Katz, 2004).

The sentiment that Silicon Savannah is overhyped also challenges iHub's success in question. Given that its role is to act as a nexus for various actors and to disseminate information that support the development of the arena. A researcher with iHub, the incubator and co-working space, had the following to say about the doubts that had begun for foment in the arena:

> […] I mean even [after] 5 years for iHub its like, 'where are your success stories? Where are the successful start-ups?' And I think it is challenging, I think, and again this is the measuring, the figuring out what is success. You know there is financial success and I think there are definitely some examples of start-ups that have become financially successful as well but there are those intangibles again like most of the young people who come through these spaces you know don't have work experience, don't have you know many social networks and there are a lot of those things they can develop here that outwardly you can't prove or show. And so, sometimes it's that learning and feeling the happiness just naturally by getting old and by being around others, yeah, so I think there is value in these spaces. I think it is just they shouldn't be used like oh, the magic solution. I think people need to realistically look at them and see what they can do and cannot do. [Interview, iHub Researcher]

As the respondent indicates the benefits that individuals derived from interactions within these hubs, are not always monetary or quantifiable. The reason that they are not valued, however is because they do not meet with the expectations of what constitutes success. iHub has been foundational to Silicon Savannah, however, if it is measured in terms of net wealth creation criteria, it is likely to fall short.

I began to think about how unintuitive entrepreneurs' constructions of success were when I observed how frustrated the team at Pronto, a firm where I was conducting participant observation, were about their inability to attract investment finance. I also wondered where the message that they had failed was coming from. Pronto's revenue is generated through its work as an IT consulting firm or software development house. The firm also develops and maintains a variety of online platforms for large corporate clients—mainly websites and eCommerce platforms. Pronto, the IT consultancy, has been around for about three years but, ProntoPOS, the new inventory management software that they have developed, is only a few months old. Pronto's partners were seeking investment so that they could concentrate on ProntoPOS, and leave their IT consulting business behind. These goals reflect the startup imaginary derived from the experience Silicon Valley and codified into business school curricula. Two of three Pronto founders had gone to business school and this was reflected in their language, skill sets and visions of what opportunities and success entailed. When probed, the owners of Pronto state that their idea of success is a 'buy out'. Exit refers to the circumstances through which investors are able to receive the return on their investment. The Business Development founder of Pronto, who had an MBA from a global top ten business school, had crafted their framework of success or exit. The fact that it is an top ten business school implies that he received what was considered the most cutting edge information about business. They presented their construction of opportunity at at competitions with much success. Yet, they received no traction with investors. The imagined futures that they presented where first, they make thousands

of sales in Nairobi and Lagos. Then, a foreign firm, like Shopify, interested in entering the African market acquires their business for hundreds of millions of dollars can seem like wishful thinking. But within the logics of digital start-up realm, making these projections is considered appropriate and even desirable. Firms are encouraged to 'dream big' or enact 'moonshots'.

Barnwell's estimation of Nairobi reflects his own model for success. The blog post below was authored in response to Barnwell's charge that Silicon Savannah does not meet expectations:

> There is no denying that for every company that succeeds, there are probably 100 or so others that met premature deaths or were still born. To that extent, we can say that challenges are abound but does it mean that the Kenyan market if fluffy? Last Saturday, I met the founders of Pesapal.com, angani.co.ke, innova.co.ke, and wezatele.com (it recently exited). The idea was to get a candid discussion on whether we are actually full of fluff, whatever that means. First, let me say that I met Nikolai [Barnwell] three or so years ago when 88 was an empty hall. I asked him what his strategy was, and he said the idea was to fund start ups, hype them, get clicks and eyeballs and then sell it off. Apparently this model has succeeded in Europe. I remember thinking, this is the biggest load of bovine deposits I had encountered in a while. I asked whether he had done his study to know whether the European model will work or not and he said he had, so who was I to think that our market is different. I asked him whether this is still the model and he is yet to get back to me on that. (Wanjiku, 2015)

Barnwell did not recognise the activity in the arena as constituting success because the models that are available to measure performance are shaped by a particular cultural context. Wanjiku argues that Barnwell should have anticipated that the Kenya

market was different and he could not sell data and advertising here as one might in Europe. I would add that like any investor he had engaged in speculation. He had attempted to implement a business strategy. Doing so was an experiment, and therefore failure was a possible outcome. There are no guarantees in venture capitalism. Was Nairobi then, actually, being held to a different standard?

Wanjiku's reflections represents the main rebuttal to Barnwell that his inability to acclimatise was his failing. This perspective was seen as an attribute of investors.

> Start up founders need to say no to investors. This applies to those crappy ideas investors come up with, just because it worked in Europe, US, it doesn't mean that it will work in Kenya. […] There is so much we can say about government, culture…etc… but this is a market and rules of natural selection apply. You come to a market and within two years you want the start ups to "disrupt" and take the market by storm. You got to be patient. (Wanjiku, 2014)

'Clueless investors' are characterised as potentially leading one astray. This point of view runs counter to the view of selectors as good at deciding between technologies or firms (Bakker et al., 2011; Borup et al., 2006; Van Lente, 1993). This view of them characterises them not as only hampered by an informational deficit but as hampered by their knowledge, and the expectations that they construct from that knowledge. A founder of a revenue generating, digital technology firm advises that ICT4VC, rather than increasing agency, restricts entrepreneurs and makes them beholden to others:

> Entrepreneurs need to keep their eyes on the ball. A lot of entrepreneurs are losing focus and directing their energies towards getting funding from venture capitalists. A business needs to grow step by step. […] In our case we had just

> enough money for every step in our journey. A common trend right now is that of developers seeking money, then later working on how to spend the said amount. That trend lacks vision and is driven by money. You need to be guided by your business plan. Cost comes last. You have to decide to either grow one step at a time or be tied to the hip to a VC for your entire lifetime. (Mulupi, 2013)

This exhortation that venture capitalists can lead one astray was a common theme. Importantly, the entrepreneur presents participating in ICT4VC as a preference rather than as a necessity for founders and developers.

In scientific endeavour failure often characterised simply as a (often necessary) step towards success. Entrepreneurs are encouraged to 'fail up' and keep striving until they are successful (Steve Blank, 2011; Suchman, 2011; Suchman and Bishop, 2000).

> …failure [and the resulting externalities] is inevitably part of capitalism. Competition is a harsh yet beautiful thing…it pushes us on and up towards ever higher standards and higher value for consumers. I much prefer that to communism, in which failing companies limp along in perpetuity offering poor quality…job retention yes but to the detriment of the consumer and overall economic vitality [Blog, An iHub Manager]

The ability to fail and survive to try again, however, is a privilege that is not accorded to everyone.

One of Moola's founders remained optimistic about the future of Silicon Savannah, and on their own prospects:

> […] we know we are walking into some uncharted territory where there is [sic] little reference points. Even in terms of how this ecosystem will work. I mean, look at the work that the likes of *Jumia* [continental eCommerce company,

> *Amazon* equivalent, of Nigerian origin] are doing and at the same time, even for them, they are learning as they go along. So, for us we are optimistic but we are also in it. Like, right now there is no room for optimism, we are in it. We are doing it. There is no turning back. So, we hope for a brighter future but at the same time, there's hope, there's faith and there is determination [Interview, co-founder *Moola*]

Moola's representative references Jumia, a well-financed Nigerian company, because of the reports that they were struggling to apply their business model to Kenya. There was an awareness that they were conducting experiments and have to 'make it work', but not yet that perhaps this meant that the model was inappropriate. Moola's CEO lay the blame not on high, but low expectations for Silicon Savannah:

> I feel there is definitely a lack of easy, attainable capital, compared to any other start-up scene, anywhere else in the world. And exclusive of start-up capital, it's not just the actual, physical money but also people who are willing to lend their knowledge base as well. I think those combined…easy access to small amounts to start, as well as really amazing, experienced veterans in the game…we would start seeing these things developing at a faster pace with higher returns. [Interview, CEO Moola]

Silicon Savannah's arena had collectively suffered from the paradox articulated by Garud et al., (2014). Crafting a narrative that would attract interest and legitimacy required creating high expectations, which are difficult to meet. Failing to keep these promises induces disappointment, even though they were overblown.

Conflating success with 'exit' and therefore with investment seemed to the problem. A number of revenue generating digital enterprises have become sustainable without

investment financing. Craft Silicon, developer of banking software, grew by acquiring one customer at a time. CEO, Kamal Budhabhatti, reports that he built the company entirely from word of mouth and will tell you that he started without a business plan. Seven Seas is a multi-million-dollar concern that hires scores of local engineers. Seven Seas' origins are in developing custom software tools. Eventually, the firm concluded that becoming a vendor, installer and servicer of technologies made by global conglomerates was much more lucrative. It appears that there are alternative approaches to creating a digital enterprise. Cellulant Corporation, which links customers and businesses through a variety of mobile phone and online applications, built their company one customer at a time (Kemibaro, 2012). Today, their clients consist of large conglomerates like Barclays Bank, Unilever, and Pepsi. Yet Cellulant's CEO's wish to receive investment funds, seems almost as a rite of passage.

> Ken laments at the fact that when he started Cellulant there was no kind of real venture funding in Kenya or the African Continent. It was really friends and family who helped give their business a starting chance. Ken hints that he is considering starting an Angel fund for start-ups in Africa so as to give them the "kick-off" that he never had to ease the passage to viability as businesses. […] One thing Ken pointed out during our chat is that Cellulant needed to "pivot" its business model at an early stage to remain viable. This was the point when they moved from focussing just on mobile content and bulk SMS services to handling mobile services for financial services providers. This move is more or less the main reason they are still in business and have expanded exponentially across Africa. (Kemibaro, 2012)

Cellulant has since attracted upwards of $40 million in seed funding after it had already begun generating hundreds of thousands of dollars in profits. While expansion is

probably best financed by debt, rather than revenues my analysis is that the power of the narrative of the start-up is evident in how success is constructed in Nairobi's arena of development. While Safaricom is not a start-up, its first Vodafone CEO, Michael Joseph, has expressed that in order to succeed, one has to adapt and contextualise their approach to business to the locale, rather than have the locale to adapt to an external mode of thinking:

> "We needed to be revolutionary in order to be successful," said Michael Joseph, founding CEO of Safaricom and now the director of mobile money for Vodafone, in an interview. "If we applied western standards to all of the things we do, we would probably still be in the dark ages in Africa." (Collins, 2017)

The juxtaposition of dark ages and western standards in this instance is different from the typical position where western standards and modernisation are allied.

6.6 Selector Attitudes Towards Risk and Geography

Arenas of expectation privilege selectors. The underlying assumption is that the venture capitalist is an ideal judge of marketable technoscientific products. Investors are, however, operating at an informational deficiency (Bakker et al., 2011). Yet this does not change their status in the regime of mutual legitimation. Barnwell's ability to create a media firestorm and challenge Silicon Savannah's claims reflects the discretion that investors have over arenas of development and their power relative to enactors.. Even though ultimately these statements reveal that he did not make good choices as an investor.

In the context of economic matters, Africa is metonymic for underdevelopment and risk (Mkandawire, 2015, 2001; Nyamnjoh, 2013a), which as Mkandawire argues has no basis in empirical fact, only in rhetoric (Mkandawire, 2015). Rhetoric then becomes self-fulfilling. The co-location of capital and the hegemonic imaginaries of development is not a coincidence, it is evidence of coloniality. Capital is concentrated in certain parts of the world as a factor of historic patterns of extraction (Fanon, 1952; Mbembe, 2016b, 2001a; Wallerstein, 2004, 1995). Since the taken for granted assumption is that affluence and development are the result of particular socioeconomic practices, what counts as knowledge economy knowhow is also a factor of the power geometry that emerges from this history. The extent to which Africa has been integrated into global financing systems is evident in the banking industry. In the last decade, international banks have retreated from operating in Africa after the last economic crisis. This, even though Africa was not the source of the crisis. Furthermore, by being traditionally excluded from the (mis)adventures of global finance, African sites were actually effectively insulated from the worst of the problem. This illustrates that capital's construction of risk is not necessarily based on objective realities. One of the reasons that many Africans are unbanked is because for a long time, local, commercial banks operated in these locales utilising a particular template to determine who is a reliable customer. Technologies like M-Pesa and organisations like SACCOs have demonstrated that different financing models can accommodate a lack of collateral, for instance.

Safaricom's success is based on its interest in servicing this market segment and has innovated in order to do so. Similarly, Kenyan bank, Equity Bank, operates in the Democratic Republic of Congo and South Sudan. Risk is in the eye of the beholder. African settings often are associated with particular modes of extraction. Companies as disparate as mining and consumer goods companies, for example, operate in African settings despite stated risks. Similarly, there is a sense that a certain kind of technology product will be successful in African, than others.

> Nothing gets a donor's heart racing than an African farmer being able to check market prices on their phone but pitch to them Africans creating their own game and they are suddenly not so interested (Alliy, 2014a)

The notion that technoscientific endeavour should be focussed on ameliorating the local context is tied to the notion that it is backward and that it is almost immortal to expend time effort on frivolities.

I asked some immigrant investors what they thought of the idea of Nairobi as a risky site for investment, and of Lagos and Cape Town as safer choices. Some were of the opinion that Barnwell and others who expressed similar opinion were misguided in expecting similar outcomes in all locales [Interview Bekker]. A key message was the importance of adaptation to the context and the development situational knowledge and awareness in order to succeed [Interview, Jesper]. These comments are similar to those made by Michael Joseph, the former CEO of Safaricom. When pressed about what adaptation entails, interviewees, however, tended to characterise adaptation to the Kenyan context as inuring oneself to risk, inefficiency and perverse moral

economies. The sentiment is that in order to succeed one has to be risk averse. The question is whether Silicon Savannah is truly more risky than another locale.

Countering the constraints of negative expectation can mean that actors are incentivised not to inform potential investors of their realities and to play up just how much their setting is similar to the selector's. The founders of Moola are returnees who are keen to have the locale seen through such a lens. For many, Nairobi's growing reputation as a 'tech hub,' and the assumed universality of the Silicon Valley ICT4VC model is why they relocated to this geography. This combined with the 'Africa Rising' narrative, which presents Africa as becoming less of a risk. Discrediting Silicon Savannah and negatively affected its risk profile would not only undermine the expected flow of capital, but also their personal aspirations. According to them, the key to changing the imaginary of the locale is a local success story:

> When I think about it, maybe what this continent needs is some breakthrough technology to happen so that people can be like, you mean there can actually be a billion dollar business that can come from…you know what I mean, just the way it happens in Silicon Valley… [Interview, Co-founder Moola]

The fact that Moola's co-founder felt that the success of one company could have implications for the entire continent speaks to Africa as a discourse or idea, rather than a place. Surely, one successful start-up should not represent the sociotechnical capabilities of fifty-four disparate nations. Blanket legitimation seems to the opposite of a blanket perceptions of risk.

A perception of risk that prevents international Card Schemes rules from allowing credit card processing companies like Square to process transactions for Kenya. This has implications for Moola and other eCommerce companies:

> When you look at certain services that online products need, such as credit card processing, none of the giant players will service you. [Those] that have the best technology and the ones that are readily available, because you are outside of the States or Europe. The fees you are paying will just eat into your margins. [Interview, Co-founder, Moola]

Card scheme companies are not selectors, but their perceptions are reflective of the prevailing perspective. Moola cannot change this perception so for awhile it is able to mask its true location and use the services of the company, Square. Once the provider realises that they are in Kenya they are barred from using the service and they have to find an alternative way to receive payments from customers abroad.

Success stories, like mobile banking, do indeed have the effect that Moola expects, of generating business enthusiasm for the locale (Roundy, 2016) by making 'intertextual linkages' between one experience and another (Garud et al., 2014) . For actors who hold the perspective that Westernisation is progress, success stories can lead to an assumption of normative convergence. That Africa is indeed rising and catching up. M-Pesa's success also seem to confirm that gaps in service represent business opportunities, and that the often low-income, underserved represent a viable consumer segment (Anderson and Billou, 2007; Carvalho et al., 2011; Dolan and Rajak, 2016; Foster and Heeks, 2013; Hart and Christensen, 2002).

This strategy of reconstituting Africa's imaginary and risk profile taps into another stereotype of the continent as that of new frontier. The blog post below is written by a European founder of a social enterprise in Nairobi:

> One of the first proper streets in Nairobi is called Biashara Street. It means business in Kiswahili. That is very much what Kenya is about. It is a miracle of obstacles that has kept it from growing, including colonial rule, corruption, and dependency creation through post-colonial influences, a weaker educational system, and being by-passed as the world economy has grown. […] The real picture is more complicated though and would require a longer sit down. That sit down would end with the same conclusion though (since I am a rhetorical wonder boy) and that would read that Africa is rising. There is something that has changed in the way the world, Africa included, views Africa. You see, I don't think the world, again Africa included, has fully realized until recently that the world needs Africa. Not only as a battle field and a resource base or a stage form something, but as a source of brain power, labour, change makers, a stable environment, a wildlife reserve. Most important of these is the brain power and the labour. (Blog, LightUp Founder, 2015)

The world cannot exist in its present form without previous patterns of extraction from Africa. (Appiah, 1994; Mbembe, 2017, 2001b; Ndlovu-Gatsheni, 2018). Any narrative that suggests otherwise is indicative of the persistent coloniality in global engagement—even when it comes from anti-colonial schools of thought. Africa has long been included, but in ways that reinforce marginality and dependency. In fact, digital connectivity is increasingly revealing itself to part of the continuum of how the world systems have tended to engage with Africa—capitalist exploitation (as opposed to investment) and a civilising mission.

> Members of the community are seemingly averse to showing weakness, a characteristic that becomes visible in the outlier cases where a start-up founder, team, investor or hub has had a nasty run-in and word inadvertently gets out. []

Some Silicon Savannah actors, however, often framed digital technologies and the digital arena as spaces and as tools for accountability in a context where institutional corruption is characterised as rife. Thus, playing into the imaginary of developing countries as particularly corrupt. They communicated that their arena symbolised a change that was worth investing in. It is evident in the sense of collective responsibility over the contestation over Angani. Both the cases of 88mph's departure and the schism at Angani are a strike against the legitimacy of Silicon Savannah as destination for venture capital. During the Angani meeting, a woman in the audience spoke up: "I am the only white investor in here. I guess I am confused about what the issue is here. Is it about investors coming in and exercising their rights to see excellence?" She discussed the "skills gap around business" as a "culture". Explaining that "there's a frustration that the community has a lot of ways to innovate but not how to monetise. It happens all the time. I am representing $100 million who want to invest in this country."

The blog excerpt below represents the perspective of one of the actors, an investor:

> That meta-narrative is, "white investors are abusing their money and privilege to push out black Kenyan founders of a company to steal it." […] The real meta-

> narrative of this story is one of inexperienced management and the subsequent irresponsible behaviour of start-up founders, and how that reflects on the Nairobi tech ecosystem at large. […] Tech investors are driven to invest in companies that can scale, gain market share and subsequently make profit. They look for great teams that have good ideas that they can execute on and pivot with as the business landscape changes around them over they (sic) years. […] This isn't about race but instead the simple realities of how ugly and painful it is when a company goes through real management challenges. Nairobi has benefited from an openness to foreign talent and investment for many years – and it shows in the successes that have happened since. […] We're one of the most dynamic and active tech communities on the continent, and because of this have high visibility to investors. Capital will not continue to flow to other start-ups in Kenya if investors believe that a gun can be held to their head on governance and oversight issues of their investments. There are other places that they can go where the community will be more investor friendly, and where they can fall back on the rule of law to protect themselves. (Hersman, 2015)

This excerpt summarises the socioculture of ICT4VC environments, where the investor is considered the ultimate expert.

> Unemployment in Africa is at a critical level. In Kenya we are on the edge where 75% of the population are youth with lots of energy and I believe other African countries are the same. We can choose to use this energy by all means or fail for fear of losing control of ownership (which we do not have in the first place). To attain reasonable economic growth and achieve lower unemployment rates with acceptable price stability, you need extraordinary measures in Africa. Schumpeter's creative destruction (entrepreneurialism) becomes imperative irrespective of sources of capital. (Hersman, 2009)

The blog post also indicates that Silicon Savannah is beholden to its reputation with investors (see section 6.3). Though it is not stated explicitly, the subtext is that the

source of the flow of capital has the capacity to "go where the community will be more investor friendly"(see Section 6.2). The continued flow of capital is dependent on the sources feeling that they have discretion over the trajectory of their investments. This excerpt reveal the constraints on Silicon Savannah's entrepreneurs, which rooted in the inherent coloniality of the arenas of expectation

6.7 Valuing Marginality and Inclusion

The discussion of Silicon Savannah's origins emphasises the important of ICT4D discourses in establishing is sociomaterialities. While much of the discussion has focussed on profit-making, the social good imperative and its narrative infrastructures continues to shape the arena. I have also argued that ICT4VC and ICT4D emerge from the same underlying philosophy and this can be evidenced by how the aim of reducing marginality has been commodified. agency conferred by developmentalism is precarious (Escobar, 1995; Mosse, 2005; Shakya, 2017). It goes without saying that if the definition of progress has been dominated by Euro-American perspectives, that the same is true of the construction of poverty. Of the myriad approaches to poverty reduction, inclusion into the global economy has come under the most scrutiny in this thesis. This section discusses the narrative infrastructure of inclusion and the scaffolding that it offers to digital entrepreneurs.

Entrepreneurial opportunities are often framed in terms of scarcities, problems and gaps (Ngoasong, 2018). In the Kenyan context, where a large segment of the population is poor or low income, one of the concerns that shapes the arena is how to

create narrative infrastructures that frame poor and low income technology users as a viable market. Problems abound but who will pay to solve them, particularly when you eliminate the financing infrastructure for ICT4D?Businesses, big and small, wonder how to extract monetary value out of poor or low income people, also known as the bottom-of-the-pyramid (BoP).

By focussing on users, it is possible to imagine an alternative scenario, whereby locales appropriate ICT technologies and produce localised discourses, innovations and practices around their use (Mavhunga, 2017a; Odumosu, 2017, 2009). Users who cannot be apprehended by technologists, because they exist at a distance that is not only mediated by space-time but also by familiarity and relation, are excluded from processes of user configuration whether they can pay for technologies or not. In cases where digital products and services lessen inequalities in social development, these customers are further marginalised when businesses are only able to cater to cosmopolitan consumers. Thus, along with considering how the digital economy selects for certain entrepreneurs, it is important to also consider how it selects for certain customers.

This kind of marginality often overlaps with low purchasing power. Social enterprise is framed as a business that is allowed to include other priorities other than profit, including allowing the preferences of less privileged groups to guide innovation (Kaplinsky, 2011; Kaplinsky et al., 2009). *LightUp*, is a social enterprise that sells solar, LED technology to low income households that cannot afford grid connection.

LightUp solicits for grant and philanthropic funds to purchase lamps that are manufactured in other parts of the world, and imported by local wholesalers i.e. they do not design or build their product. The model is that the funds obtained from selling the lamps, would fund LightUp's operations and the purchase of more lamps for sale to other families. In this way, LightUp would ultimately be a sustainable enterprise, as opposed to a charity organisation that would constantly need to solicit for grant funding for survival. Unlike Pronto, LightUp's identity is embedded in their characterisation of their clientele as low-income. LightUp's imagined user, is a student studying for exams, the customer is their parent. LightUp's narrative emphasises improving the educational performance in school-aged children by providing them with steady, reading light in the evenings.

Both LightUp and M-Kopa present those at 'the bottom of the pyramid' as an untapped market segment. According to M-Kopa, "If you take the long-term view and if you treat low-income people as customers, not charity cases, you can change the world." (Faris, 2015). The founder of LightUp expressed similar sentiments in his blog entries:

> Do gooders are sometimes really good at building long term value […] but others have done tremendous damage. When IKEA and UNICEF partnered to distribute solar lamps for free (you could buy one in Europe and they would give one to some "poor person in Africa"), they caused many, many entrepreneurs selling similar products (and creating jobs and so on) to go out of business. They also

fuelled the image of Africa as poor, which is equally stupid and ignorant. [Blog, Founder LightUp,][18]

Both LightUp and M-Kopa's social interest is reflected in their business model which offers solar lighting equipment under an instalment payment plan.

Willingness-To-Pay and purchasing power are an economist's term that contrasts the customers' desire for a product, versus their ability to afford goods and services. Entrepreneurs often act as if these are one and the same. Commercial actors envision their market segment as capable of making purchases, but requiring convincing or to be made aware. While social entrepreneurs envision their customers as willing, but unable. Underlying both these perspectives is the notion that inclusion into the global political economy is desirable because it is development. A definition of progress as modernisation means that poverty is synonymous with exclusion (Lentin, 2019). My experiences in the field led me to consider the extent to which the discourse on inclusion was inconsistent with the goals of poverty reduction.

Purchasing power notwithstanding, all users are exhibiting their interests, preference, range of knowledge and utility of the technology when they purchase the technologies

[18] While I have included citations for all other blog entries, my goal is to hide the identity of LightUpLightUp's founder, therefore I cannot provide identifying information for this blog.

(Wyche and Steinfield, 2016). A lack of uptake is not simply a matter of having or not having enough money (Wyche and Steinfield, 2016). M-Pesa demonstrating that it was possible to generate millions in profit in this locale (Collins, 2017) has possibly created a confounding narrative. The development configuration assumed it meant that the populace was keen to adopt ICTs. The for-profit actors determined that it represented commercial opportunities and they became increasingly disdainful of the narrative of African poverty. They saw it as misinformation, particularly with the advent of the Africa Rising narrative, and a reason why financial investors were reluctant to put their money in African start-ups.

M-Kopa's business entire business is predicated on households being able to make small payments. After an initial outlay of Ksh. 3,500, buyers paid Ksh. 50 (50 U.S. cents) a day, deducted from their Safaricom mobile phone airtime.

> The interest M-Kopa charges is high by U.S. or European standards. The cash price of one of its products is about 20 percent less than the installment price. But in the markets where the company's working—so far, Kenya, Tanzania, and Uganda—the rates are competitive. Traditional microfinance companies typically charge about 20 percent interest on their loans, and in October the Kenyan government issued treasury bills that offered investors a 23 percent annual return. (Faris, 2015)

M-Kopa is a development configuration darling. It also draws interested from capitalist actors. Development actors may balk at the mention of high interest rates, but venture capitalists on the other hand would be drawn to this kind of language.

LightUp's founder believed that M-Kopa's model was flawed and would fail in the long-term. He anticipated that M-Kopa would run into the BoP's purchasing power limits. He did not reckon however with M-Kopa's status, having been legitimated by powerful development configuration and private sector actors.

> [Mkopa] have Safaricom backing them and at the time they backed them, was unheard of. Any other person trying to look for a collaboration with Safaricom at that level—Safaricom would have taken that idea and done it themselves but because they have the Vodafone connection, the DFID connection and a British CEO there were people who were willing to play ball, who wouldn't have been willing otherwise. [Interview, serial entrepreneur]

I pointed to the similarities between their business models and offered the opinion that the demise of M-Kopa would therefore spell a similar fate for LightUp. The founder disagreed on the basis that that the social enterprise model did not require LightUp to generate returns for investors. He did not think that M-Kopa's investors would ever see returns to match the substantial investments that they had received. The discussion we were having was in fact about the promises LightUp and M-Kopa had made. By generating expectations about interminable growth, M-Kopa had set itself up for failure. LightUp on the hand promised to improve educational attainment to donors who did not expect returns.

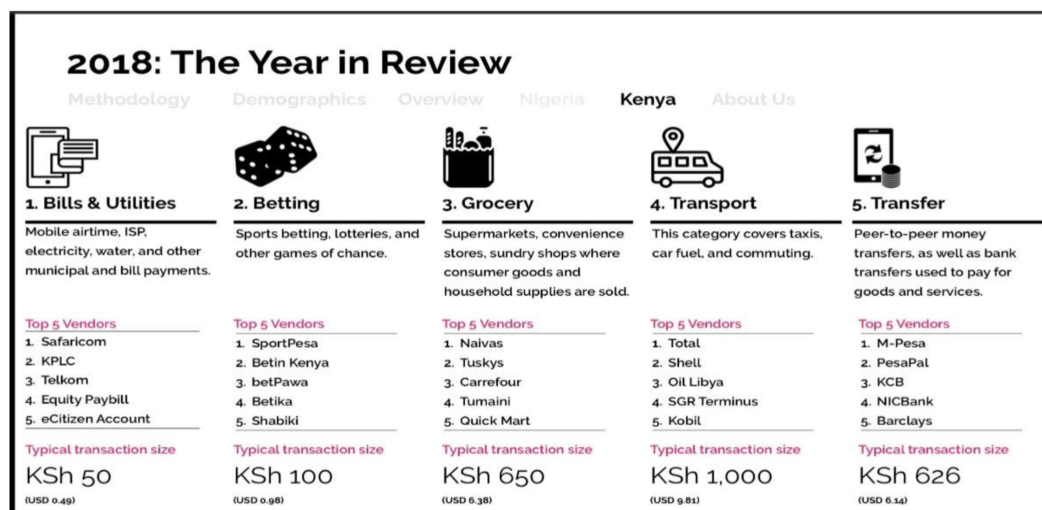
Since M-Kopa collects data on the credit worthiness of their customers, they are able to use this information to determine which of their customers might be interested in and able to play for other white goods. M-Kopa had begun to offer electronic goods like flat screen televisions to their reliable customers under the same PAYG plan as

their solar products. Digital technologies provide a means of collecting data from users, which LightUp did not have as a result of its 'analogue' payment collection method. LightUp had sales officers, rather than a digital system. Thus, as part of my customer survey, I was asked to include questions about what other electronic, household products previous customers would be interested in purchasing on an instalment basis.

M-Kopa and LightUp are a conduit for ushering in Kenyans into the culture of consumption. Aside from the solar lamps, LightUp was already selling 'Jikokoa' a cook stove that saved on charcoal used in cooking. I spoke to LightUp's customers about what appliances they might want or need. They tended to view electricity and electronic goods as luxury items and markers of social mobility, and completely different lifestyle. Customers would buy them when they could, rather than as a matter of necessity. These technologies represented not only the acquisition of new forms of knowledge but a restructuring of daily life. An alternative to the inclusion imperative lies in allowing a user focus orientation to guide technology development. It is likely, however, that this would immediately foreclose on the feasibility of many of these business models. Particularly those oriented towards the mass market.

Customers in this context have shown themselves willing to make economic trade-offs for desired technologies, but their budgets are limited. These customers are often referenced in terms of their neediness—bottom-of-the-pyramid—rather than their willingness-to-pay, which is a better indicator of their preferences. Figure 2 below

indicates spending habits in Nairobi and Mombasa. In it we can see, the popularity of sports betting at no. 2, which implies that users will not always do what is considered ideal.



Source: Reach Africa (2018)

<u>Figure 2: Top 5 mobile payment transaction types by Kenyans in 2018</u>

A study on introducing farmers' markets to low income neighbourhoods in Kentucky, USA notes that in order to provide a desirable service to low-income communities, the market needs some manipulation:

> Creating markets that foster development of the local food system requires concerted, strategic efforts, but often, celebratory depictions of farmers' markets slight the details of the hard work and frustrations involved. (Markowitz, 2012, p 72)

In this case, the establishment of this literal market required government interventions such as welfare subsidies for prices that were commensurate with what people were used to paying for food (Markowtiz, 2012). Alternative models to technology production and commercialisation might emerge were digital entrepreneurs to pay attention to technoeconomic affordances of their customers. They might find themselves as preoccupied as I was with whether their enactments and artefacts are locally appropriate, rather than with the goodness of their performance of digital entrepreneurship. Firms are incentivised to understand their customers in terms of how they will be valued by the investor or donor. The firm's identity is crafted for the financier, and this may include a process of configuring the user to meet the investor's worldview.

Over-customisation, was how one interviewee described the outcome of the logics of the social enterprise arena. The international development arena required organisations to be fairly specific about who they are helping. LightUp has a section on their website titled 'Poor Customers' which delineates how their organisational identity is enmeshed with educational attainment in school-age children. LightUp's officers sold to anyone customer because they knew, hyperfocu was ultimately not a good sales strategy. LightUp's imagined user, a student studying for exams, in a low income, rural household is very compelling as development target. LightUp solicits for grant and philanthropic funds to purchase lamps that are manufactured in other parts of the world, and imported by local wholesalers i.e. they do not design or build their product. The model is that the funds obtained from selling the lamps, would fund LightUp's

operations and the purchase of more lamps for sale to other families. In this way, LightUp would ultimately be a sustainable enterprise, as opposed to a charity organisation that would constantly need to solicit for grant funding for survival.

Progress in this case often means increased commodification (Cindi Katz, 2004) and technologization of relations, practices and ways of life. It was revealing to understand how reductive the framing of the low-income user is, concentrating as it does on conceptualising poverty and 'dollars a day' and ignoring variables such as capabilities and preferences, considerations which are afforded to other user groups. The idea of disposable income, failed to reflect that after subsistence needs are taken care of, choices and priorities exist at all income levels. It also brought home the fact that the main purpose of work was so that people could buy food and amenities. Conceiving of work as a means to self-actualization is a luxury; much of the rhetoric around digital entrepreneurship traded in these ideas of a 'dream job'. I thus, made a note not to correlate BoP with rural, as I felt there was a tendency to do, and to distinguish Willingness-To-Pay from purchasing power. At one school, we were able to make a presentation at the parent-teacher meeting the following day. The parents sitting on the grass, in the warm afternoon sunshine listened patiently, but we did not make any sales. We left the lamps with teachers and principals and asked them to sell them on our

behalf.[19] The institutional logics of international development often make fudging, dissembling and ambiguity fundamental requirements if the system is to hold together and prosper (Mosse, 2005; Olivier de Sardan, 2005a).

> When someone tells me "wow, you are in the centre of the African tech scene in Nairobi!"– I always reply "It is also the centre of the African NGO/donor scene". That is the reality. My job is hence harder than when I go to South Africa and Nigeria given the competing narrative […]. Nothing gets a donor's heart racing than an African farmer being able to check market prices on their phone but pitch to them Africans creating their own game and they are suddenly not so interested. […] I also think those who can harness the positives of donor/NGO money and also fundraise from serious investors are at a serious advantage, in our portfolio it's Eneza Education. We are running our VC course end of July 2014 with our South Africa friends and the University Of Cape Town Business School along with sponsors/donors to help start-ups raise serious money. I can play it both ways too if it helps with scaling start-ups, not just the "scene". (Alliy, 2014b)

[19] LightUp's MD tried to hire the cousin of the officer who had enrolled in university. He also failed to meet my expectation, that a young, unemployed person in rural Laikipia would be happy to have a steady income. This trip was responsible for a thorough examination of my beliefs and assumptions. In a phone interview, Patrick later informed me that he may have been unemployed by our standards but not by his, being a small-holder farmer and occasional motor-cycle taxi driver provided him with sufficient income.

The individual above indicated that aligning oneself with the development configuration generally meant dealing with a restricted view of what the locale needs. The implication is also that a narrative that checks the boxes is likely to receive support. The awareness that one could ‘play it both ways’ is prevalent in the arena. The correctness of this is an ongoing topic.

At LightUp large donations came in from international development organisations, philanthropists and organisations seeking to exercise their corporate social responsibility. Individual donations were also received through the website. It turned out that they were not tracking lamp sales as closely as they were tracking donations. When I was there, they were reckoning with the fact that millions of shillings were missing from their accounts. It turned out that a number of officers in out-posts around the country had failed to remit customer payments and Nairobi HQ had overlooked this issue for months. A white board covering one wall at LightUp listed their salaried sales agents, and how much they owed for stock they had received but had not remitted any payments. Some of the officers owed LightUp upwards of Ksh. 1.5 million (US$ 15,000), given that a lamp cost Ksh. 4,000, this translated to 350 lamps. The manager let me know that they were in the midst of attempting to prosecute some of these officers for theft.

To say that the discussion on this particular subject became contentious, would be an understatement. As the email below illustrates questions around representation and

whether non-local actors could accurately contextualise the needs of groups with whom they did not have frequent contact became a topic of contentious discussion:

> While your point about Kenyan representation is an important one as a "principle", where is this discussion of XXX's supposed lineage getting us? […] There are very important "issues" to be discussed in the statement, issues and challenges that impact on millions of lives, and any success we might achieve (as the human collective) in bridging digital divides and putting truly sustainable development--one that "lifts all boats"--into practice. If someone is doing a good job of representing "us" (whoever we are or however we identify), being of service, or otherwise working for a purpose near and dear to us--even if s/he is not one of us by birth or nationality--what real difference does nationality make in this case, as a "practical" consideration (again, I understand that the principle is important in a "meta" way)? It is a good thing for that person to understand that there are limits to how much they can speak for us, or our needs, experiences, thoughts, et al. But this particular subject doesn't seem to be so "nationally" related that a person cannot do justice to what is happening in Kenya re ICTs and all related issues. There obviously need to be many channels of open communication, many ways in which viewpoints from Kenyans can be included centrally in whatever is important for Kenyans to address. Outreach for such information-gathering and inclusion is vital, and forums like this can provide that. Appointing of Kenyans to policy-making positions and in other venues where "Kenyan" input is crucial is both important and necessary, especially in circumstances where non-representation would lead not only to ineffectual policies and programs, but even worse, a return to a form of colonialism (i.e. policies and programs constructed "for" Kenyans, but "without" Kenyans represented as central decision-makers). Again, that doesn't seem as relevant here, though. The development-related issues are crucial to learn from and address, however. [Email December 3, 2008]

The email writer argues that the questions under discussion are universal and therefore what matters is not where a person is from, but their capacities. The counter-argument

is that inclusion has to begin in the halls where decisions are being made. How is it that a discussion on inclusion can proceed without those that are to be included.

Another critique of the discourse of inclusion that was not raised, but flows from the previous argument is that it tend to delegitimise certain modes of existence. It is modernisation, by another name. Those who are being included are often being saved from what is seen as a deficient situation. If those who are discussed were in the room, how would they characterise their problems? Would they seek full enrolment into a different way of life and society (C. Katz, 2004). Given the learning curve that is requires for actors, for example, to develop use cultures around platform products, is the effort that would go into this worth it. Technoeconomic affordance is seen as a barrier to bridging the digital divide, rather than as representing an opportunity cost. Resolving technoeconomic affordance precludes other activities.

There is a paradox in the fact that given their educational attainment and income, those in Kenya who talk about exploitation by the elites, often leave themselves out of the category of potentially exploitative elites. Mkandawire (2015) warns of this mythos, particularly popular amongst the developmentalist configuration or so-called third-sector organisations, that cast themselves as pro-citizen, beneficial and neutral. While the state is seen as separate, distinct and neopatrimonialism. A doctrine that is particularly strong in Kenya’s socio-political space and that was evident in the ICT4D community. An email that preceded the contestation incited by the debate over mobile and broadband highlights KICTANet idea of their mandate:

> CSOs must be the "conscience" that keeps both market and political forces on the path of social justice and intervenes where the two cannot adequately meet the needs of the people [Email, January 6, 2006]

The logics of international development present local third sector organisations and activists as good enough proxies of the population. This allows them to speak on their behalf and deliver services to them. The developmentalist configuration might seek to serve the public, and often do, but it is important to recognise that given the professionalisation of development, they have their own interests. A certain moral hazard emerges from making these arguments as part of a career (Mkandawire, 2015; Mosse, 2005; Neveling, 2017; Olivier de Sardan, 2005a).

Furthermore, these individuals and organisations must appear effective, and yet they must simultaneously be seen as necessary in order to receive the legitimation and resources that allow them to function. The resolution of problems eliminates their rationales for their organisations to exist.

6.8 Universality of Approaches to Techno-enterprise

As long as global asymmetry structures imaginaries of progress, we can expect that even Africans will forge an idea of Africa that based on how it is perceived by others (Meinhof, 2018; Mudimbe, 1990; Slaymaker, 1996). Casting African settings as alternatives to modernity also reinforces the centrality of Europe (Fan, 2016b; Grosfoguel, 2007; Seth, 2016; Tsing, 2011). Critics of post-colonial analysis challenge its tendency to centre Europe (Grosfoguel, 2007), even when it seeks to do the opposite

(Fan, 2016a). This framing can also erase the contribution of post-colonial places to the historical development of so-called modernity (Appiah, 1994; Fan, 2016b; Hecht, 2011; Mbembe, 2017, 2016a). In fact, scholars have long debated whether on the one hand 'Africa' can be a wholly endogenous idea or do the effects of colonisation and its continuities mean that it must continue to be constructed through an external gaze (Mamdani, 1996; Mazrui, 1993; Mudimbe, 1994, 1990; Ndlovu-Gatsheni, 2018). A question that applies at the continental level, but also has salience at the level of Silicon Savannah. Is Silicon Savannah also defined by selectors?

Silicon Savannah is certainly shaped by global discourses and is subject to the distant selectors gaze, however, this is desired by the digital entrepreneurs in Nairobi. Semantically speaking, the words 'digital enterprise' refer to the commercial opportunities emerging from ICT technologies and from access to the World Wide Web. There are numerous examples of how digital technologies have created livelihood opportunities in African settings and sources of employment outside of the imaginary of the start-up e.g. opportunities for roadside maintenance and repair of mobile phones (Houston, 2013). Even when these firms are formal, brick-and-mortar operations, the most prevalent form of digital business is the antithesis of the Silicon Valley archetype, they are small, lifestyle businesses, rather than fast-growth, high-value ventures (Ngoasong, 2018). They are businesses with limited scalability that are dependent on the skillsets of the owner or a core group of founders (George and Bock, 2009). This is considered evidence of failure for those for whom ICT4VC narrative infrastructure is the modulating discourse.

In my view, understanding particular approaches to business as universal means that enactment translates into actors assimilating into ecologies of knowledge, rather than to appropriating useful knowledge and practices. Knowing how to do business in Kenya is also a knowledge set, but one that is not credentialed and cannot be conveyed in a classroom in the same way that Western business norms can be transmitted through an MBA. Returnees often spoke about how long it took them to reacclimatise after having been away and learning how to be in another place. The paradox is that discourses on inclusion into the knowledge economy seek to assimilate actors into particular know-hows and norms, while excluding their localised, appropriate knowledges and ways of being (Mignolo, 2017). This is a reflection of the coloniality of knowledge and its continued effects in the present day.

This is not a claim that there no universals or "situation-transcendent knowledge" (Barnes, 1998, p 154). This is knowledge that recreates particular orders in new contexts. Tsing (2005) offers a mechanism for how they can exist—the transcendence, transfer and appropriation of received knowledge forms is a process of developing analogies between local processes and other models. The assumption that the model and/or the metaphor of standards developed elsewhere are reproducible is often unquestioned (Mosse, 2005; Olivier de Sardan, 2005a). Many contemporary 'universals' are mobilised as modernising strategies and development interventions (Neveling, 2017; Sabaratnam, 2017). The experiences of Silicon Valley that emerge from situated, local practices have been distilled into supposedly universal axioms. Silicon Valley as a universal model for digital entrepreneurship, has been legitimised

by academic work and policy discourse (Avle et al., 2017, Carver, 2010, Hill and Mudambi, 2010; Parthasarathy, 2004; Porter, 1998; Saxenian, 1994; Steiber and Alänge, 2016) and made pervasive in the global culture by media and entertainment.

> When looking at major conferences and promotional events over the past five years, it becomes apparent how much the discourse has shifted from cost and battery issues, to an imagined future inspired by Silicon Valley high-tech hopes (Wentland, 2016, p 290).

Wentland (2016) illustrates how this treatment of Silicon Valley as a method and template for innovation and entrepreneurship has affected the electronic vehicle research environment in Germany. Over the course of three years of ethnography, the author tracks how it has shifted the arena from framing the intractable technoscientific constraints in battery research as science problems, to viewing them as problems that can be solved by the logics of so-called innovation ecosystems. One interview respondent, a digital entrepreneur turned PhD student, agreed with Barnwell that the ecosystem was not delivering on its promises. He differed with Barnwell, however, by registering the failure as a function of Silicon Savannah's strategy of replicating the Silicon Valley method when there were local mechanisms that would suffice and be more fitting.

> [….] there's a way in which there is conviction and oh, we have to use all these models because that's how tech start-ups work. You know, we have to get angel investors, you have to get venture capital, oh they are doing this thing in the US, it is called YO combinator. We have to do our own version of the YO combinator. But there are models that actually work locally, you know. And there is a reason why cooperatives have worked locally because they address the needs, they

> actually address the needs more perfectly, let's put it that way. [Interview, digital entrepreneur/PhD student at University of Nairobi]

The decontextualisation of entrepreneurship has occurred because of assumptions about the universality of practices and knowledges emerging out of Euro-American contexts and thus assessing Silicon Savannah according to its appeal to distant investors. If we ask what it is that gives venture capitalists power—the answer is lies in Deuten and Rip (2000) illustration, using a product creation process, that whether or not enactments adhere to the script, attribution to the script is a method through which actors legitimate their activities. The power lies with the script-writers. For entrepreneurs in post-colonial places this translates into conveying cosmopolitan credentials. There is, thus, a strong feeling in Nairobi, that there is a class component to the performance of digital entrepreneurship. ICT4VC is a speculative activity that does not reflect the potential gravity of the consequences of failure:

> The real-world cost of failure in this part of the world is probably like 10x greater than SV (Silicon Valley) and the developed world more generally. The probability of getting back up after failure is also significantly lower. Sometimes I do not think VCs here get that… The investor has a portfolio out of which 1/10 success is good enough. The reality is of the other 9 is 1/1 [is the only option]. And there is no unemployment benefits. Here it is 'game, shot'. And it is not easy to transition to employment either. The fortunate ones have some other income to prop them up or fall back to family post failure event (Interview, Entrepreneur, e-zine)

In the same way that social imperatives can make entrepreneurs most attentive to the needs of their family, they also encourage high net worth individuals to support

entrepreneurs within the family. This expands who can act on the opportunity to participate in entrepreneurship (Khayesi et al., 2014). Thus, entrepreneurs who come from privileged families and groups have a lead over those whose family background is less advantaged. Not only because they have familial resources supports but also because their failure does not have a wider impact. When the entrepreneur is the best-off individual in the family, pursuing digital entrepreneurship is an existential, and a financial risk for them and their families. Particularly if other options for income generation are available. Nevertheless, the goal should not be to eliminate the imperatives that emerge from kinship networks, but to expand the inclusivity of the kin-ties. This has the effect of spreading the wealth, as well as the risk. Kinship is only valued, however, as a source of capital, but not as a sink. In which case it is cast as moral hazard. I regularly observed that the length of time an actor had been a digital entrepreneur often determined the extent to which they were willing to recognise that universalised models for digital entrepreneurship were at best, flexible guidelines. Those who did not, would verbalise their alignment with the discourse and draw analogies with others' experiences, but their practices would reveal themselves to be particular and contingent (Graham, 2015). The next chapter discusses the strategies developed by actors who have become attuned to the paradoxes of the arena yet still seek legitimation in order to access resources.

7 FABRICATING SILICON SAVANNAH THROUGH STRATEGIES ATTUNED TO CONSTRAINTS

I am interested in the recurrent theme, also highlighted in previous chapter, that there is a certain falsity or insincerity[20] to the moral economy of Silicon Savannah. I am not interested in whether Silicon Savannah is a legitimate arena of development or not. Instead, I wish to examine the legitimation systems that have oversight and assess it. In addition, I am interested in why this assessment has been produced. I argue that the asymmetries that structure relations in the arena, lead actors to become attuned to them and develop agentive strategies that can even the playing field (Amrute, 2019). Actors are exploiting narrative infrastructures in the ways available to them because they cannot change them. They are constrained to meeting selectors expectations. Previous chapters have illustrated how dominant discourses about digital telecommunications and economic development are made material in Kenya by responses that reflect both

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[20] The narrative about corruption in African countries is oft repeated. I propose that if one considers the global financial crisis, The Panama Papers or the antics of the CEO of Theranos, one might conclude that the world is, and has always been, full of trickery. Trickery does not need domestication, it seems to rise up out of societies, naturally.

coercion and aspiration. Chapter 6 has evidenced how discourses shape the Silicon Savannah arena of development, in particular. When they cannot reproduce what is expected, actors behave in ways and make claims that allow them to appear as if they are meeting expectations. In some cases they are actually enacting different practices but achieving the desired results—in which case, their claims elide the differences between their approach and the idealised approach. They align themselves to the prevailing methods. In other cases, what they are enacting are practices that give the appearance of meeting expectations—but, neither the practices nor the outcomes are aligned with the prevailing narrative infrastructure. These are arenas of fabrication. Therefore, here, 'fabricate', has the dual meaning of 'to make' and 'to make up'. Social production is taking place, even though it might not be what is expected or preferred. Silicon Savannah is authentic, even if aspects of this include being an inauthentic Silicon Valley.

I wish to analyse these fabrications as a strategy for surmounting some of the constraints of the ICT4VC model and the paradox of legitimation.

> If globalization pays for creative economic value, then globalization tells you that you are too poor to be creative, then globalization has condemned you to poverty. (Kieti, 2009)

There is a school of thought that morality is locational or "situationally appropriate" (Barnes, 1989, p 28). Amrute (2019) in her study of techno-ethics uses the idea of attunement to reflect on how actors adapt to their environment and produce particular strategies of survival. A survey of the literature on constrained agency in contexts that

are akin this research's interests yields a large amount of scholarship around labour, employment and the precarity of livelihoods (cf. Bévort and Suddaby, 2016; Coe and Jordhus-Lier, 2011; Cumbers et al., 2010; Katz, 2004) but not about entrepreneurs. Perhaps, this is because entrepreneurship is regarded as an activity for people who have autonomy and authority, less beholden to institutional arrangements, and are often local and global elites. Scholars cast attunement and constrained agency as "strategies for getting by" (Cumbers et al., 2010, p 60) by a precariat. Applying constrained agency to the entrepreneurship context is new, given that entrepreneurs are not often cast as an underclass. I argue that startup entrepreneurs' position is often a precarious one, particularly if you are located in geographies whose imaginaries are often case as non-modern. Entrepreneurs in Nairobi are liable to experience precarity in a more acute manner, relative to digital entrepreneurs anywhere else in the world.

The selection environments for digital technologies are structured by capitalist logics. These logics circumscribe how actors in the arena construct success, knowledge, obligation and priorities. Sociologists of expectation explain the process of technology production as a promissory arena, where 'enactors' make promises to 'selectors' (Bakker et al., 2011).

> "Economic relations and practices 'of all kinds are influenced and structured by moral dispositions and norms ... and those norms may be compromised, overridden or reinforced by economic pressures" (Wiegratz, 2010, p 125).

Economic and livelihood pressures are strong incentives for moral restructuring. Bakker et al. (2010) introduce the concept of 'socio-cognitive games' to discuss the

dynamics between enactors and selectors in arenas of expectation (p 153). The concept acknowledges that actors act to address the power and informational asymmetry between enactors and selectors.

7.1 Paradoxical Mutual Legitimation

In previous chapters the politicised nature of discourses of technology production because they involve the political institutions of the state. These discourses do not stop being political because they are operating at the microlevel. Institutions continue to provide resources and legitimation, in exchange for enactments and accounts that evidence the universality of their discourses and the accuracy of their expectations. They do this in part to prevent them from being embarrassed by their failure to anticipate (Deuten and Rip, 2000, p 75). The result is a mutually reinforcing ecosystem of reciprocal and ultimately, paradoxical legitimation. The paradox emerges from the fact that when situated realities contradict expectations, continuing to validate the selection regime results in perverse outcomes. Technologies are not produced, users do not take up the technologies are produced and in cases where technologies and user groups are created, the processes are remain.

Entrepreneurs are relying on the reward mechanisms of the narrative infrastructure. The impetus to sustain its logics is so strong that the narrative infrastructure rewards actors who can produce suitable exemplars of its applicability. Through alignment actors gain legitimacy and accrue resources and the narrative infrastructure is strengthened by new examples of its own legitimacy (Deuten and Rip, 2000). While

both sets of actors need one another in order to be legitimate—one of those actors rewards alignment materially. The result is that it possible to create a livelihood out of producing narratives that align with and support the narrative infrastructure. Therefore, it is not that selectors are naïve, the entire arena stands to benefit if the narrative infrastructure is validated. In fact, deep scepticism on the part of investors means that very few startups around the world receive the kind of support that companies like Uber, Google, Facebook have enjoyed.

During fieldwork it is noticeable when I came across actors who have reflected on the legitimacy paradox that is embedded in the arena. The entrepreneurs at Pronto for instance, are fully aware of the complexity of their circumstances, but are happy to reduce their narratives to fit decontextualized, often linear, templates as a strategy for acquiring legitimacy. In fact, making their work 'fit' is considered a professional and appropriate business practice (Deuten and Rip, 2000, p 70). The incentives for this behaviour are embedded in the discourses that entrepreneurs are using as the blueprints for success. Including, the overarching free market perspective, in which self-interest and guile are rationalised as strategic business norms (Wiegratz, 2010).

7.2 Entrepreneurial Identities and Knowhows

The next sections will discuss performativity and identity in order to illustrate that in Silicon Savannah and capitalist arenas of development, more generally, narrative is a significant aspect of performativity (Lash, 2015). The way Silicon Savannah constructs successful entrepreneurial performance is evidence of the imaginaries that

they are using to guide their practices. The Silicon Valley entrepreneur informs the globalised tropes associated with the identity of the startup entrepreneur (Hill and Mudambi, 2010; Steiber and Alänge, 2016). This, even though many would argue that a good entrepreneur is one that is attentive to and shaped by their context (Welter, 2011; Welter et al., 2019). In this section, I discuss how a particular figuration of the entrepreneur has affected Silicon Savannah. The notion that there is a gap between how entrepreneurship is performed in Kenya and an ideal underpins much of the activity the arena's hubs, labs, accelerators, incubators, and competitions—sociomaterial spaces where learning about entrepreneurship occurs.

The debate over whether Silicon Savannah is overhyped, exemplified in Barnwell's media interview also stimulates discussion over what an 'ideal' entrepreneur is. The figuration of 'the startup entrepreneur' is as a representation of particular know-hows, skill sets, and mindset. The startup trope is a firm that is a small, bare-bones operation—a lean start-up with a minimum viable product "MVP" (Engel, 2015). Mavhunga (2017) has argued that the start-up is an organisational unit that is inherently African. Firms in Africa are small with horizontally integrated and simple processes or 'lean' to conserve resources (Hersman, 2012). A significant point of departure seems to be the focus on rapid expansion and market domination, and developing the procedures for ensuring this The ideal startup entrepreneurial performance has stabilized around the expectations of investors in Silicon Valley. This is true even in ICT4D arenas where the Silicon Valley model has been adopted as a good way of commodifying technologies and services that address welfare and achieve

social good. Many entrepreneurs that I spoke to saw the prevailing digital entrepreneurship imaginary as universal, replicable and applicable to them. This was true even in arenas that were not producing digital technologies.

In the arena of expectation there is a sense that enactment of the idealised performance is a proxy for the probability that a firm will successful in the long run. For instance, the confident PowerPoint presentation and practiced 'elevator speech', not necessarily important to the production of quality technological products or the management of a company, are relied upon as indicators of both. Since these are seen as skillsets rather than semiotic cues, performance is interpreted as competence. The adoption of Silicon Valley business knowledge has led to what some scholars view as mimicry (Hill and Mudambi, 2010)—a strategic mimicry. The word entrepreneurship may indeed refer to a particular persona, but the resources that it mobilises means that there is an incentive for all business owners to enact that persona. I observed how the discourse and imaginaries around digital entrepreneurship incentivise actors in the arena to converge around particular norms, and began to ask interview subjects what they thought about this.

A European management studies professor who I meet when he gives a class on Triple Helix at an entrepreneurship seminar series organised by Professor Ndemo at the iHub, explains that the entrepreneur title and identity represents particular skillsets. In a follow up interview, he makes the distinction between a 'shopkeeper' and 'entrepreneur'. Certain approaches to business are 'shop keeping'—a rudimentary

version of entrepreneurship—rather than a alternative form. This distinction recalls Alliy's categories of entrepreneurship (section 6.1). The description of the shopkeeper and the lifestyle business resonate with each other.

> **Lifestyle Business**: Business of up to 5-25 employees with founders wanting to control their destiny, often the business can be a family one. This is actually a dominant form of entrepreneurship in Africa and around the world, there are very few Zuckerbergs…(Alliy, 2014a)
> The implied hierarchy between categories of business is a by-product of the valorisation of fast-growth, high-value startups (it is even implied in the name). The digital economy represents a variety of business forms that utilise ICTs. The narrative infrastructure of high value start-ups, however, has the greatest influence in the digital economy as a subset of the knowledge economy. The neopatrimonialism school's contribution to the study of capitalism in Africa produces a sense of déjà vu. in the mid-1900s, the early years of dependency theory, neo-marxists and radical nationalists considered African capitalism in terms of comprador, petty, or a lumpen bourgeoisie—drone capitalists confined to buying and selling—as opposed to a national bourgeoisie that produced captains of industry. (Mkandawire, 2015, p 577).

The dominant view of local economisation practices is that they are insufficient. Even the progressive wing agree with the neoliberals on this point. This characterisation as a lumpen bourgeoisie is what many actors in the arena are trying to avoid. They aim to convey sophistication and ambition. Those who simply wish to have a stable livelihood are implored to' think big'. There is a hierarchy imputed into the identity of the entrepreneur. The notion that wanting to grow fast and globally should be an important attribute is reflective of the domination of the ICT4VC narrative infrastructure in the knowledge economy discourse. Based on this perspective,

entrepreneurs need to have interminable growth as a core rationale for technology production. Section 6.1 discusses how this perspective on entrepreneurship is classed and also reflects coloniality.

I posed the question about convergence towards an ideal to an investor who I is introduced to me by the professor. She had relocated to Kenya and established an entrepreneurship training centre. Since her interests are not solely in digital start-ups she has a broader view of the business landscape in Kenya:

> […] what I also found interesting was in my discussions with the investment managers, they were all complaining…all these VCs from Europe, from US…and they were all complaining about how the quality of the start-ups was not up to par and it was so difficult and I was like, okay so then there is no talent here?…. You cannot tell me that in a country, in a city with 4 million people that there is no talent…that just is not true. [Interview, Investor and Owner, Entrepreneurship training centre]

She explains that the limited lens through which investors viewa startups leads them to impose limited selection criteria on the businesses that they should back. Rather than assessing businesses and their fundamentals they have a tendency to judge entrepreneurial performativity as the criteria used to determine the value of products and ideas. Given that she was operating an entrepreneurship training centre, I asked if she does not feel that there is credence to the idea that entrepreneurship performances in the locale are subpar. I reference the professor’s distinction between the ‘shopkeeper’ and entrepreneur.

> This is an interesting question because first of all, I think there's two things…everybody who starts a business is called an entrepreneur and I think we need to make a difference between 'shopkeepers' and 'entrepreneur'. '[…] not everybody who starts a business is an entrepreneur, it might be just a shopkeeper. And by shopkeeper I mean somebody who is happy to just buy something, sell something, provide for his family. They don't need to grow. It's earning that income. That's good. That's fine. But don't push them to be something that they are not or expect things of them. [Interview, Owner, Entrepreneurship training centre]

She also draws the distinction between the types of businessperson but does not to impute any hierarchy between the two approaches to business. One is not subpar, it is simply different. It follows that I should be attempting to cast the two as amalgamate the two. I am not the only one who had developed this tendency. The Global Entrepreneurship Monitor has recently named Uganda as the most entrepreneurial country in the world (*GEM Global Entrepreneurship Monitor*, 2015).

A related but different issue that arose in the conversation with the management professor is their frustration with a tendency of local entrepreneurs to use revenues and profits on extended family and the community at large, rather than reinvesting them and growing the company. This he framed as an example of subpar entrepreneurial practice stemming from lack of knowledge A different perspective, is that it is a signal about the environment in which the entrepreneurs are operating. Kenya's is a lower income country without a strong welfare system. This structures how actors behave when it comes to sharing the benefits of their livelihood-making. Therefore, it is more a question of prioritising communal relations over business practices, rather than

knowledge. The concern for entrepreneurs' lack of business savvy is expressed in in the blog post below:

> First, as intelligent as most Africans are (just like anywhere else in the world), there is still a need for education on basic business best practices […]. My experiences have taught me that many times they make a profit, but do not reinvest that into the business, thus causing their business to wither, shrivel and die. Second, the cultural situation in rural Africa is that whoever starts to make money is expected to share the wealth with the whole (extended) family. That expectation significantly reduces the operating budget, and in my opinion, allows individuals to leech off of their own and not take responsibility for their own financial well-being. While there are exceptions to this and trickling down money to family for them to use to start their own enterprises is a good example, it hurts more than it helps. (Hersman, 2015)

Daspit and Long (2014) share Hersman's and the professor's view that localising resources within kinship networks creates a moral hazard because it changes entrepreneurs' obligations by making them beholden to family, community and social circles, rather than to business management principles. The idea being that entrepreneur's obligations are to entrepreneurship, first and foremost—to profit-making, to growth, to their investors, to shareholders and to their role in society as potential industrialists and job creators. Kin who are not self-sufficient are cast as having a moral failing. These ideas emerge from neoliberal capitalist logic which structure priorities and moralities in this particular way (Whyte and Wiegratz, 2016; Wiegratz, 2010). Scholarly arguments that run counter to this perspective demonstrate the benefits of being responsive to obligations to mutual solidarity to the entrepreneurs, and to society (Grimm et al., 2013; Khayesi et al., 2014; Viswanathan et al., 2014).

Particularly, if the definition of 'kin' extends beyond nuclear, and extended family to a wider community (Khayesi et al., 2014). Mutual solidarity makes it more resilient overall. A local financier had an understanding for these priorities:

> A Kenyan who has to feed his family and pay down debts will likely do the latter and that's understandable. I have tried to invest in enough Kenyan start-ups to understand this dynamic all too well- my hope is that I can influence them enough to get on the right path before it's too late when they go back to raise more money with ZERO traction and at a ridiculous valuation in the global marketplace. (Alliy, 2014b)

An understanding of their context generates an analysis that does not attribute the behaviour to a lack of knowledge or a moral failing. Perhaps, the word 'entrepreneur' is indeed an inappropriate title for actors who appear to have different priorities and obligations than those that conform with capitalist logic (Trulsson, 1997).

The conflict between investors in and owners of Angani is reflective of the idea that local founders do not have the requisite knowledge for entrepreneurship. Angani's founders went on to launch a new virtual data centre, Node Africa. In an interview with a local newspaper one of the founders discusses the events that led him to establish a new firm and his changed perception of entrepreneurship:

> There are many things I would have done in retrospect. I'd have maintained more control and not have given all that equity. I'd have financed Angani from the pocket as much as possible, and that would have ensured organic revenue allowed it to grow, and given us enough time to bring in investors aligned with our long-term vision. (Sunday, 2017)

Perhaps this approach is a concession to an inability to operate in a fast-growth, high value startup environment established or a growing awareness of the risks of the power asymmetry that lies between enactors and selectors.

Start-up Firm Identities

Securing investment, rather than profit, innovation, market size, etc. is the ultimate goal of many of those who claim the identity of startup entrepreneur. The identity of can be rewarding. Certainly, resources set up to cater to start-ups are much more numerous and available than those that are in place for established companies. As discussed in other sections, the banking sector in Kenya generally does not cater to people who do not already have assets to spare. As has been reiterated, one its other benefits is that it relies on narratives as evidence of value (Borup et al., 2006; Garud et al., 2014; Ivory, 2013; Jones, 2017; Roundy, 2016). Thus, entrepreneurs are incentivised to create start-up narratives and maintain them for as long as possible.

Even though Pronto was a technology consultancy, it acted as though it was a start-up. This was because they had prioritised the point-of-sale system, but doing so allowed them to participate in the arena of development. Pronto's BDO often repeated that they had a six-month 'runway'. While it makes business sense not to mix the income from one side of the business to another, the way in which Pronto characterises itself suggest precarity. Pronto's choice to identify as an 'early stage, start-up' reflects the compelling nature of the digital start-up narrative and its legitimating infrastructures.

At the time of fieldwork, as a cost-saving measure, Pronto shares its offices with *HailApp*—a local, digital enterprise success story. Success is indicated by the amount of money it has secured in its funding rounds. HailApp is gearing up for another investment round. Their proximity and different levels of success with selectors is fortunate, as I am able to contrast Pronto's and HailApp's trajectories. HailApp had initially been a Pronto product. Unlike the other software tools and applications under development, HailApp had not been commissioned by a particular client. Rather, it was a mass market, B2C, side project of the founder who was in charge of development, the CTO. The only technologist of the three. At some point, the CTO buys HailApp from the other owners. Soon after, Hail App goes on to attract investment from Savannah Fund, a local fund, and thereafter other investors[21]. Given the success that HailApp is having at attracting capital, it is no surprise then that Pronto, and other firms, would have wanted to replicate this.

To my untrained eyes, ProntoPOS was a useful, well-made product—although it was not a mass market product, which seemed to make all the difference. In the commercial

[21] Given his stature in Silicon Savannah, it is more than likely that his networks and ability to legitimate HailApp is partly responsible for its ability to attract millions of dollars in investment funding in subsequent years.

start-up realm, there is an adage that the team matters more than the product (Katila et al., 2017). In which case, on paper Pronto should have been a compelling investment prospect. This was likely a factor in its success in pitching competitions. Pronto's success at pitching competitions suggests that judges believed in the feasibility of the promises that they were making (Borup et al., 2006; Garud et al., 2014). They, however, did not have much success in convincing investors. HailApp had managed to build expectations about how it would solve intractable transportation logistics problems, and had been rewarded by investors many times over. The idea of logistics being more difficult in Africa seems to have a lot of traction. Safaricom's CEO has described M-Pesa's ability to resolve 'remoteness'. The fact that the selection environment prioritises this issue is an indicator that it can identify relevant priorities—the ICT4VC rationale however creates perverse incentives for all actors.Performative Technology Entrepreneurship

Start-up pitch competitions offer a heightened arena in which to observe the attributes considered important in 'tech' commercialisation ecologies, and the perverse incentives that shape the performance of the tech entrepreneur identity (Katila et al., 2017). It is also a good place to observe the deployment of the malleability of entrepreneurial narratives as an agentive strategy. For entrepreneurs, pitch competitions are an opportunity to gain legitimacy, visibility and resources (Katila et al., 2017). In fact, he monetary rewards offered at these competitions has led to the existence of the 'compreneur'. The term is used derisively to refer to actors who enter business ideas and prototypes into competitions, with no intention of establishing

firms. Or owners of firms that existed simply to enter pitch competitions and have no concrete intention to establish a going concern. Representing complete fabrication, the compreneur is the extreme end of performative entrepreneurship, but there is a spectrum of activities that reflect alignment and what are considered strategic business practices.

Actors faith in outcomes with very low odds is encouraged by start-up culture. You are encouraged to craft a compelling promise, nominally supported by empirical evidence about the feasibility of your plan. Since, the nature of early-stage, digital ecosystems is that often the product is represented as a claim, rather than an artefact (Garud et al., 2014; Roundy, 2016), they take whatever form they are given in the narrative. The Slush conference in Finland is an iteration of the kind of conventions hosted in connection to digital arenas of development, around the world.

> […] The presenters have to argue convincingly that their start-up team has the skills and experience necessary for success [….] potential, growth orientation, global scale, and team effort, in relation to materialities such as a ticking clock, fancy audio-visuals, and young—mainly male and able—bodies. In short, the companies selected as semi-finalists and the finalist represented the current entrepreneurial ideal. Entrepreneurship is no longer about local owner-managers with modest growth ambitions. Instead, the viability of the firm is tied to the embodied pitching performance and the affectual sensations that construct the vitality of the entrepreneur. (Katila et al., 2017, p 7)

Expectations and norms have been transmitted with great efficacy and the culture and atmosphere is similar in pitching competitions all over the world. These events are filled with young people, often male, dressed in smart clothing. The rewards for these

enactments for some are immediate, arriving in the form of prize money. For some actors more than others this performance are particular and alien. Digital entrepreneurs at these pitching competitions are not encouraged to redefine the archetype, in fact it is the opposite (Nielsen and Ybarra, 2012).

Pronto participated in the competitions so that it would be visible to the arenas selectors and to network with investors. They were willing to invest travel and accommodation costs to travel to Demo Africa in Lagos for this opportunity. Fortunately, they often win, which offsets these expenses. As is commonplace in the start-up realm, Pronto's founders assigned themselves the titles of CEO, CTO and Business Development (BD). The use of executive titles is the norm, even when an enterprise has not moved much past the notional stage. It is also a clue that the global start-up identity has a North American heritage. In Kenyan business culture, which is inherited from British norms, companies are helmed by 'Managing Directors'. Cultural exchange is not an indicator of hegemony, even though cultural exchange can occur as a result of it (Nkwi, 2015; Tsing, 2005). Business English is the lingua franca associated with the performance of digital entrepreneurship, which depending on where you are in the world is a culturally specified limitation. Pronto's three male founders by virtue of their education and backgrounds are well-versed in the language, norms and codes and technical skills of the digital technology arena of development arena.

Having to perform an alien archetype, in order to secure resources is an outcome of attunement (Amrute, 2019) and it also resonates with scholarship on the coloniality of being (Maldonado-Torres, 2007; Wynter, 2003). The performance is, however, not particularly alien to the cosmopolitan founders of Pronto. The CTO has a degree in architecture from the University of Nairobi and is a self-taught computer programmer who is well respected in Silicon Savannah and, is also known as the founder of HailApp. The Business Development founder has a degree in engineering from a UK university and an MBA from a global top ten business school. Other entrepreneurs, however, have a harder time dislocating themselves from their setting and acquiring the sheen of globality. It is no surprise then, that there would be a market for nascent startup entrepreneurs to learn how to embody the digital entrepreneur archetype. Heshan DeSilva was one of many individuals who touted their coaching skills, and was later exposed for misrepresenting themselves (Kachwanya, 2014). DeSilva was a 'startup guru' who was generating speaking fees from transmitting the social signifiers of ICT4VC while evangelising on behalf of the discourse. He claimed that he had obtained billions of shillings from American venture capitalists, which he was interested in investing in Silicon Savannah (Kachwanya, 2014; Madowo, 2015).

> Tweet: This month Heshan De Silva will teach you how to write a pitch, present it and receive finances!! Join us...
> Tweet: "Don't scratch your head saying there's no financing. With what u have, what can u do to achieve your goal?" Heshan deSilva #Entrepreneurship
> Tweet: @thenailab for the #Agreation hackathon just had a great talk from #Heshan_DaSilva

DeSilva's advice sounded like the typical, ambiguous digital entrepreneurship bromides that do not capture the poor odds of becoming a multimillionaire through digital entrepreneurship, no less. Instead he used the locale's attributes to encourage a cruel optimism (Berlant, 2011).

> We hear this every time; there are no opportunities for the youth', it's only the people in power who get rich, we have no access to capital to seize any opportunities and on and on. Quite frankly, we're directing excuses of failure at opportunities of success – which is why I'm not surprised at a statistic I heard recently at USIU that said only 4 out of 1000 people can be successful entrepreneurs. When you train yourself to look for practical soalutions to problems, you'll open your mind to countless opportunities available. You'll realise there are very proactive steps – often baby steps – you can take to achieve your goals (DeSilva, 2014)

Berlant's (2011) cruel optimism is an analysis that references how the things one desires can be the source of their lack of flourishing. This is an assessment that can be made of the effect on the aspirations of the capitalist knowledge economy. DeSilva's apparent success story generates media interest, which eventually leads to censure (Kachwanya, 2014; Madowo, 2015). The discovery that his claims were baseless was disappointing to entrepreneurs who hoped that his experience offered hope for their own prospects. However, as Kachwanya elaborates is a blog post, DeSilva is evidence of a wider issue in the arena:

> I know you are still wondering what is the big deal is about that. The problem is the last answer. The lies and the pressure to fake it. […]For Start-ups in their quest to show the world that they are doing well, the norm is to exaggerate the numbers, be it the money thing, the website traffics, the number of app downloads, and even

> the number of employees. […] At the pitching events like DEMO Africa, Pivot East, start-ups give questionable figures (stats). Most investors are not from around here and hence they would take what they see or hear at such event as it is (Kachwanya, 2014).

These perverse outcomes, however, are reflective of actors attunement to the incentives in the arena. I argue that the paradox of mutual legitimation means that narratives that reflect localised economisation or production of digital technologies are less likely to be rewarded, than fabricated narratives.

Engineers versus Entrepreneurs

At pitching event sponsored by the American Society of Mechanical Engineers (ASME), I spoke informally with three engineering students from the University of Nairobi about the hardware prototype they had submitted to the competition and their future plans. They are clear that their identity as engineers did not resonate with the technology entrepreneur archetype. They see themselves as scientists. They expect that in a competition sponsored by other engineers there is going to be greater emphasis on innovative technology, rather than scale and markets. ,A win would, therefore, be an indicator of the ingenuity of their device, rather than venture capital appeal. They, however, underestimate the extent to which the imaginary of ICT4VC has infiltrated rationales for technology production. The three winners that day split $50,000 in prize money, none of the engineering students had won. I, however, recognised the winners as regular winners in other competitions; just like Pronto. Most of them had not brought along working prototypes, let alone mechanical devices, and their Power Point

presentations were primarily about the impacts of their inventions, rather than their technical specifications. The engineers, expecting that the ASME would be interested in technical skill sets, were not yet aware of the influence that the Silicon Valley narrative had had on how artefacts, performances and narratives were valued. Given the fact that actors are succeeding in the pitching competitions simply by producing narratives, it is no surprise that the compreneur emerged as a type of actor within the arena. Amrute (2016) concludes that "intangible goods—including social relations and methods of communication—are the primary products of these [knowledge] economies" (p 2).

7.3 White Fronting: Embodying Archetypes of Technology Entrepreneurship

Basing the performance of entrepreneurship on how well actors perform particular tropes, is a truly universal element of digital entrepreneurship practice (Katila et al., 2017; Ngoasong, 2018) and is evident in the pitching competitions of Nairobi. It leads to the legitimation of the digital entrepreneur archetype which contains racial and gender subtexts (Knight, 2013; Prasad and Qureshi, 2017). Asymmetric power geometries are evident in how the innovation arena privileges actors who embody urbane, EuroAmerican modernity (Amrute, 2016). It selects for actors that embody particular attributes, hold certain kinds of knowledge associated with capitalist modernity. Representing these attributes as signifiers of competency means that racial, gendered and class attributes appear to be justifiable proxies for business acumen and expertise (Cottom, 2019).

> Although PIVOT is an investor pitching program, among the 100 start-ups we have supported, conversion from investor linkages to actual investments has remained low (with a couple of surprises). Although startups supported by the m:lab had many potential linkages to source of venture capital, not many of them with founders from within the region closed funding deals.(Kieti, 2015)

Given the overt and covert messaging about who digital entrepreneurs are, it is no surprise that being a white, male is reinforced as the ideal and rewarded. It is, then, also no surprise then that digital entrepreneurs often engaged in 'white fronting'. White fronting refers to a strategy of hiring white executives in order to attract funding. The archetype of the self-taught, wunderkind, computer wizard (Sørensen and Fassiotto, 2011) is typically white and male (Brian Su-Jen Chung, 2016; Park and Pellow, 2004; Prasad and Qureshi, 2017; Shih, 2006).

Though the prototype of the entrepreneur circulating in mainstream culture was – and, largely, remains – a narrow one, recent narratives about technologically enabled industrialism invoke a more inclusive notion of self-enterprise. [...]Participants' reflections on these imperatives emerge from the masculine-coded nature of entrepreneurship and its markers of success, which require women to assume additional risk and engage in unpaid, largely invisible labor. (Duffy and Pruchniewska, 2017)The authors go on to discuss the 'digital double-bind' faced by women entrepreneurs. The archetype of the entrepreneur, means that they they can only enact particular kinds of digital entrepreneurship. Prasad and Qureshi (2017) talk about how research on racial discrimination tends to focus on working class and blue-collar professions. Their research on the investment banking arena demonstrates that the

view of some professions as elitist and exclusionary prevents the generation of analyses that demonstrate how this manifests in those sectors (Prasad and Qureshi, 2017).

While my first encounter of the term white fronting is actors in Silicon Savannah, I trace its usage to a Ugandan tech blogger Teddy Ruge.

> One trend that I see happening (even though I completely disagree the strategy) is this: African start-ups are getting wise to the law of start-up money. In the venture capital/start-up world, money flows from like to like. In other words, sometimes it is not always about your product or business, it is about the people behind the business. Serial entrepreneurs in Silicon Valley are more likely to get funding quickly than someone no one has ever heard of or can relate to. In some African markets, this is manifesting itself as the "white front" strategy. You are more likely to get funding (or get that meeting) as an African start-up if you have a white cofounder on your staff. If you are smart, you put that white guy in your marketing videos, and/or you make him CEO. An all-black African start-up CAN get funding, but it is a lot harder to do. (Ruge, 2014)

Since Langdon Winner first asked if artifacts have politics and provided the (flawed) example of racism embedded in a Brooklyn Bridge, the resounding answer has been 'yes, they do' (Benjamin, 2019, 2019; Fouché, 2006; Noble, 2018; Wajcman, 1991). Research has shown how algorithms can be racist (Amrute, 2019; Benjamin, 2019; Noble, 2018). It is therefore not difficult to imagine that issues of bias, conscious and unconscious, embedded in arenas of development would manifest not only in products but also the selection environment (Dy et al., 2018; Jones, 2017; Pager and Western, 2012; Thomson and Jones, 2017).

Social Capital and Kinship?

In Silicon Savannah, the apparent preference for white entrepreneurs by white investors is often cast as benign cronyism on the part of the 'selector' and a leveraging of social capital by the 'enactor'.

> Race capital? No, familiarity capital Race capital? No, familiarity capital, like when you go to Somalia, you rather deal with Kenyans there (Kachwanya, 2015)

In Kenyan society, tribalism is often vilified in cosmopolitan settings and when it comes to the issue of electoral politics. It has also been analysed by others as simply an expression of the continued importance of kinship ties in society. Kachwanya, a popular blogger, appears to be making the latter argument. His opinion resonates with Hersman (2014), who describes himself as a white African and frames white fronting as a factor of social capital and networks.

> In the start-up world, Kenyan-led companies tend to be under-resourced and without the same networks that make it so much easier for expats to get started. While we've been building up more and more base resources locally for seed capital, and the business acumen of the founders is improving due to them being in town, it's still not enough. And, while the $25k accelerator level is very much present in the community, there's a huge gap in the $100-500k investment levels. So, with local entrepreneurs, this leads to a protectionist mentality about how many mzungus [slang: white people] are around and how they are sucking up resources. It's not a good place to be. (Hersman, 2014)

In section 7.1, I argue that valuing mutual solidarity might change the assessment of entrepreneurs who invest in their communities rather than their enterprises. These

actors are also making a similar argument, that in a certain context, race capital is unproblematic. It is interesting, however, that Hersman views kinship solidarity as problematic. This context, however, is one in which the more powerful actors benefit at the expense of others. As I have discussed in previous chapters, digital technologies are often cast as a solution to marginalisation and asymmetry because they facilitate inclusion.

> […] the use of digital platforms for entrepreneurial activity does not in itself ameliorate the negative effects of low or marginal social positionality. Digital entrepreneurial outcomes are neither primarily agential nor meritocratic, but are substantially facilitated or hindered by wider structural and cultural influences. This evidence further suggests that not only are familiar inequalities exacerbated with the phenomenon of digital enterprise, but also that new dimensions of inequality are emergent, such that the socially marginalised and resource-poor cannot be expected to find it an effective route out of marginality. Thus, the Internet is no leveller for entrepreneurial activity: instead, greater structural social equality is needed if we wish to support aspiring digital entrepreneurs, who still require substantial investment of a variety of resources to build their businesses over time. (Martinez Dy et al., 2018, p 603).

I argue, alongside other scholars, that the benefits of inclusion into the digital realm is asymmetric (Dy, 2017; Dy et al., 2018; Spigel and Harrison, 2018; Williams and Williams, 2011). I further argue that this is a feature of global power geometry.

That there is a lack local of capital was a constant refrain. Some of the commentary about white fronting is that it is a logical outcome of having to enact the preferences of foreign selectors. They blamed the lack of traction for firms owned by non-white Kenyans on wealthy Kenyans who did not finance ‘their own’ start-ups. This

explanation was also applied as argument when critics asked by the government was not restricting ownership in the ICT sector to Kenyan nationals:

> We have failed three times to attract FDI to the communications sector by simply trying to accomodate local ownership. Yes it is critical that we have local participation in strategic investments. But I am almost correct to state that we do not have individual capital that can match the desired investment. Collectively, we can own large junks of even multinationals. That is the reason why we changed the policy to require that investors have up to three years to list in the stock market or seek for locally monied investors. This type of model will ensure that we provide quick employment and at the same time allow the employees to accumulate resources to participate in ownership or break away to set up similar investments. (Ndemo, 2009b)

None of these debates and their arguments would surprise actors in the arena, what would likely be novel would be my argument that these constraints reflect historical financial flows and persistent effects of colonisation. Capital has amassed in particular parts of the world and capital flight continues to reflect the patterns of extraction.

Proxy for Knowledge And Expertise?

The theme of race came up often during the research. There were numerous events and happenings that elicited this discussion. At one time, proposals for legislation that required start-up firms to have at least one local founder generated conversation, which signified that the topic had come to the attention of legislators (Walubengo, 2006b).The contestation over Angani between white investors and founders was a moment when the topic was discussed in a large in-person forum.I discussed the topic with entrepreneur who was studying for a PhD in innovation ecosystems. During the

interview. he wished to turn the issue into an experiment . He did not question the existence of white fronting. He regarded it has was occurring with significant frequency.

> There's one of my friends called Richard who happened to be at Pivot East (East African tech pitching competition), I think last year's chapter, and he said a very interesting thing about Pivot East that has changed from the previous years is that everyone who pitched was Caucasian, white. Every team had a white person….Because there was this belief that that the white people add a perception of seriousness and credibility to the project. This is what I am going to say, in fact it is a typical research problem in terms of the issue of you know, correlation and causality. What was actually noticed was that the people, the teams that had white people ended up being better funded. So, you end up creating this, you look at the data, there is a correlation, wow, amazing. So, then you conclude causality, you know. But probably you need to look deeper, probably it's a specific type of white person, it's a specific type of, you know, set of skills that the white person brought to the table. Of course, there is indeed you know, the possibility that there is causality. But I have a feeling that you still really need to test to like really get to the bottom of it. If it's just an issue of, an issue of colour and perception. I mean, it's a much deeper cultural problem. [Interview, Entrepreneur and innovation systems PhD candidate]

The question according to him, was to determine whether whiteness was indeed positively correlated with particular skills and attributes. Perhaps, it was a question of knowledge. If it was, then there was nothing unexpected or iniquitous about attaching value to being well-educated and knowledgeable—locals just had to acquire the relevant knowledge and skill sets so that whiteness was no longer considered a proxy for it. He used himself as a case study: having lived abroad and attended MIT, he did not need to hire a white person to act oh his behalf because he had the confidence and

credentials that made him able to operate successfully in this world. He was right about the matter requiring analysis, but not testing, as he himself had indicated that white fronting was a reality.

> A central finding of feminist anthropology has been this positive fact: Class does not exist outside of its generation in gender, race, sexuality, and kinship. If we want to understand structural relations within capitalism, we need to begin with how they are made through broader processes of human and non-human relations. Positing “class” as an ideal-type outside such relations obfuscates the analysis, once again confusing capitalism with some imagined, overlaying economic logic (Bear et al, 2015).

The same can be said of the inscription of race into gender, class, sexuality, kinship and capitalism. None of these are exogenous to one another. A critique of global capitalism is incomplete without a racial and colonial analysis (Comaroff and Comaroff, 2012, 2016; Fanon, 1961; Grosfoguel, 2007; Maldonado-Torres, 2008; Mbembe, 2017; Ndlovu-Gatsheni, 2018; Wallerstein, 1995; Wynter, 2003).

> Contrary to the Eurocentric perspective, race, gender, sexuality, spirituality, and epistemology are not additive elements to the economic and political structures of the capitalist world-system, but an integral, entangled and constitutive part of the broad entangled ‘package’ called the European modern/colonial capitalist/patriarchal world-system (Grosfoguel, 2007, p 217)

The questions is how they shape and are shaped in particular scenarios. The founder of a digital media company came across as supremely confident. Like the PhD student he was a returnee who has lived in the United States for decades where he worked for conglomerate Johnson Controls. He recounted to me, in a jocular manner, how he

always brought his white friend, to meetings with multinationals and corporate actors like Safaricom. His friend, who has an undergraduate degree in engineering, had switched careers and was now a chef in a Nairobi restaurant, but his degree enabled him to speak convincingly as a technologist. His friend was a participant in the game.While there might be entrepreneurs who likely felt that their firm had acquired a skillset through white fronting, he indicated for him it was about the optics. White fronting, it seems, in some cases at least is predicated on entrepreneurs' expectations of how other actors view white-led firms, not on how entrepreneurs view themselves.

Rebecca provided the analysis below in a blog post that illustrates the sentiment that the preference for white founders/managers was not rooted in their knowhow:

> Until very recently (in Kenya at least) starting a business meant using your savings and shoe stringing, pooling money with friends and getting money from family members to start and sustain your business. Financing your business through Venture Capital and Angel Investments came into fashion in Africa tech three years ago. The starting of the tech spaces brought together some Western immigrants with idle money, others without, some educated, others not. I remember attending a meeting about rising Kenyan tech companies and in a room of about 20, there were only two black women and a black man. Others were western immigrants running companies in Kenya and the going conversation was that they had sufficient money and all they needed were ideas. Even my fellow woman noticed the trend and wondered if there were no Africans in tech doing good stuff. Believe me when I say that all those ideas sounded sexy, but had no way of making money or breaking even in the next five years. We wondered if such enterprises were being run by black people, would they get attention from a giant multinational with bottomless financing capability? It led me to ask; is VC funding inherently racist? Get me right, at times people feel comfortable with

> people they know or know where they can get them from if everything went south. Maybe that's what is used to justify tribalism. I have heard stories of one company getting VC funding and a relationship is established. The company is then sort of made the local contact person and the go-to person in determining whether the VC invests in local companies. The story goes like; anytime the VC made enquiries and a company was headed by local chaps, the local contact would discredit the company and dissuade the VC from funding but you can guess what happens when the reverse is the case. (Wanjiku, 2013)

Many respondents indicated that the felt that there was no basis for the preference, and that the practice was detrimental to entrepreneurs who were better skilled than those who were receiving the funds:

> Tweet: many have no "formal" education. But their skin colour is equivalent to a bachelor's degree. Some African experience is master's degree
> Tweet: I once worked in an organization where a fresh graduate was brought to be our boss. Qualifications: skin colour
> Tweet: Unfortunately, it us Blacks who discriminate against our fellow Blacks while favouring Wazungus [whites]!!!

Research from Emory University, Deloitte, and venture firm, Village Capital showed that that 90% of foreign investment capital in Africa went to migrant entrepreneurs (Peter W. Roberts et al., 2017; Strachan Matranga et al., 2017).

> If you're an emerging market founder and you're not part of a well-connected elite, it can be difficult to build trust and relationships with investors, advisors, and other partners. In a recent Village Capital study, we found that more than 90% of funding for East African start-ups went to expat founders (most early-stage investors in East Africa are expats themselves). Meanwhile in India, 78% of start-ups that raised follow on investment had at least one founder who attended one of a few top universities. (Strachan Matranga et al., 2017)

Even more crucial, was the finding that white founders received investment capital more frequently than people of colour with the same qualifications (Roberts et al., 2017). The researchers also concluded that "cultural bias might be driving the perception of lower entrepreneurial skills" (Roberts et al. p 3). The investor and owner of the entrepreneurship training centre, who had also been an entrepreneurship coach at Barnwell's 88mph expressed the feeling that the talents of local entrepreneurs were misjudged:

> When I was at mph, I was working with some businesses where the CEO was chopped, replaced by 23-year-old who had done the right business school in the UK… I think local entrepreneurs are not given a chance. I truly think so. I think it is also a language issue, and with language, I don't mean French or English or whatever. I mean using the right terminology, it is completely unrelated but maybe this will help in this one—when you look at investment, everybody always says that there is no local investors or it is starting now. Well, depends on what you look at it…if you look at SACCOS…I mean, that's been around for so long. So it depends on which glasses you have on, if you see it or not. That's what I think. And I think it is very similar with entrepreneurs…if you are looking for typical characteristics [Interview, Owner, Entrepreneurship training centre]

She is also perturbed by the assumption that all white people had the same level of expertise as she did. The positive stereotype was as problematic to her as a negative one. She was chagrined by the accordance of similar expectations of business acumen to Peace Corps volunteers and fresh graduates. When she had many years of executive level corporate experience and an advanced degree in econometrics:

> What I am personally sometimes bothered about, as well, is that they seem to think that because you are white that you know everything and that you have an

> opinion about everything. I, by chance, am good at what I do because, God damn it, I have had the most expensive business school in the world. I've held very high functions with Orange and Phillips. I have a background, I actually know my stuff and it's not because of… And it's frustrating for me as well to be put on one level with any silly person who thinks coming to just…no longer is it volunteering…it's setting up a social enterprise. No, I actually have credentials to show for it and why is that not recognised? It is both ways sometimes, you know. [Interview, Owner, Entrepreneurship training centre]

Village Capital pointed to a practice called 'pattern matching'—which essentially legitimised stereotypes about who could deliver on investor expectations (Strachan Matranga et al., 2017; Walk-Morris, 2018). It seems that Silicon Savannah had successfully replicated at least one aspect of Silicon Valley—the positive bias towards white males, and the low expectations for some other groups (Brian Su-Jen Chung, 2016; Shih, 2006; Walk-Morris, 2018).

Attunment to the Status Quo

During the period, I was writing up this thesis, the controversies and the conversation around race of the entrepreneurs and investors continued (Mugendi, 2019). When a firm that was not a finalist wins the pitching competition Techcrunch Battlefield in Kenya it elicits the conversation:

> […] this was at a startup event in Nairobi where at the same event several speakers spoke about how being white (and male) affords you a certain amount of privilege when it comes to funding and other opportunities. Irrespective of how you paint it nothing screams privilege like what allegedly transpired with LORI Systems. (Mohapi, 2017).

It is also a topic when an infographic shared on social media selects for firms with white owners and/or white managers, and shows them to be the firms with highest financing rounds in the arena (Digest Africa, 2018). When the role of CEO of Twiga Foods switches from the a white, American, Oxford-educated co-founder to the other co-founder, a Kenyan, who at the time is an executive at Coca-Cola, there is speculation that this is another example of white fronting. The Kenyan founder had been a silent partner until after a $30 million funding round (Mbapandah, 2019), after which he becomes CEO.

Twiga Foods appoints Peter Njonjo as its Chief Executive Officer. Njonjo was the most senior Kenyan at Coca Cola Company where he spanned 21 years; leading the multinational's West and Central Africa business unit as President. He takes over from Grant Brooke, a researcher who has spent over a decade studying East Africa's informal markets. Brooke will retain his executive role in the organization, working with Njonjo to expand the start-up's footprint into the rest of sub-Saharan Africa. […]Brooke has, in the past five years, led the growth of Twiga Foods into one of Africa's most successful start-ups, a magnet for investor interest, awards and recognition. Over the years, the business has raised KSh3 billion to fund its expansion from tier-1 funds. (Okuoro, 2019)If indeed Njonjo and Brooke had employed a white fronting strategy, then it casts dount on the argument that funding preferences for white founders reflected capabilities i.e. that EuroAmerican immigrant entrepreneurs are simply better at being fast-growth, high value startup entrepreneurs—recalling the

‘shopkeeper’ versus ‘entrepreneur’ discussion. This was a popular interpretation of the imperative behind white fronting

> Tweet: Nairobi: Where a mzungu [white person] will deliver a more compelling mobile money story or articulate the plight of rural farmers
> Tweet: KoT [Kenyans on Twitter] TL about mzungus [white people] winning in Silicon Savannah. It's got nothing to do with local vs foreign but quality of start-up
> Tweet: Lots of $$ in NBO seeking capable founders with viable ideas that can scale globally! This is really not about race

A different argument is that it reflects a need for intermediaries between local firms and foreign investors. This argument reflects an acknowledgement that the norms of the arena reflect EuroAmerican culture rather than a universal knowledge set. There was another way of framing this that is related to the idea that Silicon Savannah is an arena of fabrication. LightUp’s founder, and in his capacity as an investor and advisor to international social enterprise funds, reported that he recommended that financiers fund companies that had a white person on board. He based this recommendation on his perspective of Silicon Savannah as risky new frontier and his direct experiences with LightUp employees who had failed to remit payments.

An article written by the former Twiga CEO and co-founder, Grant Brooke, highlights that the expectations of venture capitalists often have to be managed, and that it is the job of a CEO to bridge the gap between expectations and realities:

> Three years ago, on the stage of an international pitch competition, I stood in front of judges and a thousand entrants with a single PowerPoint slide of a banana,

> which simply stated: “This is a Banana”. Its simplicity got a big laugh. A few months prior to this event, Peter Njonjo and I had launched Twiga Foods: A B2B marketplace platform that sources produce from farmers at above-market prices and delivers them to retailers at below-market prices. […].I’ve always wondered what a venture capital limited partner (LP) meeting would be like for a venture capitalist (VC) when they explain that they are investing in a Nairobi-based company that, on the outside, looks like a tech-based banana distributor. Africa’s challenges and opportunities are remote from the realities of most VCs and LPs; thus, these could look strange to the world’s venture capitalists. Bridging this gap is the core job of any early-stage CEO. […]Entrepreneurs cannot easily satisfy preconceived notions of venture-backed businesses, while solving problems in a scalable and sustainable (and profitable) way. This is why so many international companies and well-funded cookie-cutter models have failed on this continent: these businesses have been removed from their contexts. […] Kenyan-only hiring: While at times controversial with investors, this principle has been essential in building Twiga. It is hard to call yourself good when you are allowing global inequalities into your business. Foreign developers earning more than locals is not only unfair, but it also creates resentment in your company, and resentment is the single biggest corroder of culture. As we prepare to go international, we will necessarily become international, but the principle of not reflecting inequalities that breed resentment will not. (Brooke, 2018)

The excerpt reveals attunement to existing asymmetries, not only in power but also in information, their effects and that one needs to strategize around them.

Black fronting?

In the international development arena, the paradox of legitimation materialises slightly differently. The social entpreneurship arena seeks testimonials from locals as evidence of efficacy. The other firm where I conducted participant observation,

LightUp, is exemplary of the opposite imperative white fronting. The firm has a European funder and a Kenyan Managing Director. It is because of the nature of the Managing Director's role in LightUp that I I reflect on cosmopolitan elitisms and the other worlds that seemed to disappear in their presence. The Managing Diretor has local knowledge and cultural awareness and is therefore tasked with portraying the narrative of the firm and conveying that it is not speaking on behalf of 'others', rather they have been incorporated into the firm. This is because this firm is a social enterprise and the related narrative infrastructures extol inclusion and indigeneity.The other development arena attuned actors to a slightly different perspective. Light up's Swedish founder said that he had hired an MD who could travel through worlds that he himself could not gain access to as a foreigner [Fieldnotes, 24/05/2015). The founder also recognised the need for a Kenyan spokesperson, particularly in the development world where showing engagement with local actors was an important criterion for funding. The MD therefore travelled around the world narrativizing their impact—which was constructed around the goal of educational attainment. He did not, however, handle other managerial tasks like oversight of staff or finance. If anyone showed interest in financing their efforts, he directed them to the Founder. Both the imperative to white front and to make visibly local actors the spokespeople for social enterprises stem from the same modernising philosophy and expectations of Africa. The difference is that the narrative infrastructure of social good enterprises requires them to illustrate their benefits in the for of human development rather than profits. The evidence needs to be embodied.

HailApp's CEO (and Pronto CTO) is one of the people felt that outrage over white fronting was misplaced. He is aware that many in the ecology attributed HailApp's recent oversubscribed funding round to his white, American COO. During the Angani community meeting, the topic of race was raised both in the room and on social media.

> Are we not going to about the meta-narrative that black founders feel like they can't get funding (princelySid, 2015)

HailApp's CTO expressed: "We can't start playing the race card if we are to build a global business. From the investor side have respect from the founder who holds the vision." He spoke about being willing to take a back seat in his company, if he thought that he would able to keep his shares and remain keeper of the company's vision. He drew comparison with other rifts in Kenyan society: "Being a Kenyan, I am always met by tribalism…I am Luo, my fiancée is Kikuyu….it is not coming into the tech community…". There did not seem to be a dispute over whether white fronting existed, the question appeared to be whether it mattered. When interlocutors urged others to refrain from including a racial element to the proceedings,the main reason seemed to be that doing so would discourage investors from the arena. The selection below represents a number of tweets on the subject generated that evening (#Techroundtable, 2015):

> This isn't about race, but if y'all don't shut up, Nairobi will stop benefiting from foreign talent and capital. GTFOH!! #techroundtable
> ----
> 95% of the people who we're trying to raise money from are white

> Bringing in the race card will mean that you don't access that 95%
> ----
> We pulled the race card which was very stupid in retrospect #techroundtable
> Response 1: Race is a real factor though. We can't side-step it #techroundtable
> Response 2: my position on that, unless we put in our own money we can't win #techroundatble
> Response 3: Foreign money or local money is not the question. It's the people, the vision and the support behind the money that matter #techroundtable
> Response 4: It's unfortunate when race, not business decisions are questioned in business decision conversations. #techroundtable
> Response 5: The New Companies Act provides that a company must have at least one director who is a natural person #techroundtable

A fund advisor at Safaricom's investment fund, confirmed that there had been a preference for backing white-led firms at Safaricom's Spark Fund—which had led to the establishment of rules that required at least one Kenyan funder. According to him, the preference for white managed firms was because Spark Fund's pragmatic calculation that the firms that are more likely to continue attracting financing are those with white founders ot managers. Therefore, they were a safer early-stage financing investment.

> […] there's always this discussion on what is called race capital. […] I worked for Safaricom Spark Fund, which is a fund trying to invest into the local ecosystem. Your average expat who came to pitch a start up in Kenya had raised no less than 300 K, whereas the average Kenyan had not raised any money and was looking for a sum that was less than 300 K. So, for me it always seemed grossly unfair because some of these people had even better ideas but unfortunately, there's also a great misconception that you need a white co-founder to make money or to raise a lot of money. [Interview, Serial entrepreneur, Spark Fund Advisor]

The expectation that capitalist relations arenas are naturally exclusionary can lead researchers to regard studying this aspect of their sociology banal (Prasad and Qureshi, 2017), but it also has the effect of making this behaviour seem logical. According to Tsing (2005) those who believe in particular universals are limited in their ability to see their exclusions. The privilege of having blind spots is, if not a form privilege, it is a product of it.

7.5 Narrative Flexibility and Fabrication in Context

The performance of entrepreneurship includes a rhetorical dimension (Jones, 2017; Lash, 2015; W. Mignolo, 2007). When the performance is a fabrication, the importance of the entrepreneurial narrative grows. In the months I was with Pronto, I participated in preparations for meetings with potential investors, competitions and the like. The technology's narrative morphs and changes to fit the audience. For most pitching competitions it is presented as a cloud-based, point-of-sale system. We even tried to develop a social good narrative in order to enable the firm to attempt to use ICT4Ds narrative infrastructure to access grant funding. These narratives do not misrepresent the technology and its functionalities, rather they are adjusted to fit the legitimating infrastructure in question. Entrepreneurs produce narratives that they believe match investor expectations. Depending on the product and the financier, this might mean generating narratives that are aimed at countering or affirming the imaginary of developing countries as risky and non-modern.

Social enterprises are required to produces a slightly more complicated narrative, which mirrors the evolution of the developmental configuration's doctrine ideology from strictly neoliberal, to neoliberal with an interest in social welfare. Social entrepreneurs are expected to integrate social good and markets. Light up sells solar lamps, and does so without formally including digital technologies, likes its main competitor M-Kopa solar. The two of them provide a good basis for discussion about what digital technologies actually enable, and how that is narrativized is dependent on the arena of expectation that enactors are operating in.

M-Kopa Solar is a start-up company that sells solar lamps on a pay-as-you-go (PAYG) basis. LightUp's main competitor, M-Kopa[22], sells the same lamps but identifies as a commercial, digital enterprise. This is because its payment collection process is automated through mobile phone technology.

> It is run using a control box, which contains a mobile data chip, through which customers can buy credit for their power using mobile money transfers. The company can process payments, monitor the system's functionality and tackle problems through its proprietary, patented technology platform called M-Kopanet (Aglionby, 2016).

[22] LightUp is a pseudonym because I promised interview subjects confidentiality. Data on M-Kopa is collected from media profiles.

M-Kopa has been very successful at engaging with various legitimating infrastructures by shifting identity constructs and claims. Aside from establishing itself as a BoP service provider, and therefore a social enterprise, it is also able to claim the digital enterprise identity because of how payment is collected. They also define themselves as a clean tech company because they are increasing the use of solar technologies. To another audience, they are described as a financial technology (fintech) start-up because they provide goods on credit and subvert the need for credit scoring information (Solheim, 2016). Each of these different designations require a different narrative and performance. M-Kopa's skillset includes the ability to navigate the logics and discourses of all these realms and produce a cohesive narrative. If success is framed as the ability to secure financing, M-Kopa is performing well as evidenced by the variety of M-Kopa financiers and the size of their investments. M-Kopa has received grants from interactional development organisations: DFID and the Gates' Foundation; Al Gore's venture philanthropy firm, which touted its 'cleantech' credentials; Steve Case, founder of AOL (America Online), Richard Branson and others might have been swayed by its promise of market returns.

It is understandable that, even though entrepreneurs have the most information about their products and the locales in which they would be deployed, their credibility would be scrutinised. After all, they have an incentive to create narratives that present their prospects in a good light. Narratives do several kinds of work in the arena. They are a means for "transmitting culture, facilitating sense-making, constructing identity, providing legitimacy, garnering attention and charting the future" (Roundy, 2016, p

242). The continued legitimacy of the meta-narrative of innovation and entrepreneurship is dependent on continued affirmation (Lok, 2010). Organisations, polities and individuals, in turn, are legitimised by their affiliation with the narrative (Abbott, 2005). They are also particularly important for entrepreneurs. Promises are entrepreneurs' access key to resources in the arena, and their ability to be convincing and create expectations about the future is a valued skillset (Borup et al., 2006). The most compelling promises are rewarded with legitimacy and resources, through narrative infrastructures and promissory environments set up for this purpose (Deuten and Rip, 2000; Garud et al., 2014).

Imagined Users

During the period of ethnography at Pronto and LightUp, both companies tasked me with conducting market research. The goal was not apprehending the customer, rather it was generating narratives that would be attractive to potential investors by fitting with the narrative infrastructure. If the goal, at least in the immediate term is securing investment or funding more generally, entrepreneurial narratives tend to sell not only the product, but often an imagined customer base.

> And what really struck me was a few things. One was that in the whole start-up scene, everybody wants to be an entrepreneur and the first question always is always: 'Hi, can you help me, I need money, I want to start my business' and one of the things that I believe in is, nine out of ten businesses don't need funding to start. They need customers, they need a good business plan, and they need knowledge on how to run your business. They don't need funding.

The compelling stories about the path to growth, profitability and exit require the generation of a narrative about the technical artefact(s) imagined users (Ivory, 2013). Selling hypothetical outcomes is typical of the start-up economy (Bakker et al., 2011; Borup et al., 2006). My own analysis was that a focus on financing seemed to be incompatible with a focus on the user.

While this information might be pertinent if one was seeking to sell the product, Pronto was more interested in sale estimates. The desired information indicated the proportion of respondents that had indicated that they would purchase this kind of product. Given the description of the product, the answer was that every retailer that used paper ledgers was interested, but with conditions—the conditions, however, were superfluous. While being able to say that this data had been generated by a PhD student from the University of Edinburgh was as it turned out, of importance to their narrative, using the management consulting background they had among them already drawn up estimates and made projections. It was in the midst of this short course in the business management lexicon, that I realised that I had misunderstood the aim of the exercise. The conclusion was that there were 5,000 potential customers in Nairobi, which equalled to monthly revenues of Ksh. 20,000,000 (USD 2 million) per month. This information was organised into a Powerpoint slide that was saved in the 'pitch deck'.

I expressed scepticism over the prediction that they would be up to 1,000 users at the end of the year. This projection simply could not be determined by the survey or by their sales record. Pronto had secured about forty users, between November and April.

The BD often expressed frustration with the fact that they spent at least the equivalent of three working days on installation, which was mostly training their customers to use the software. At that rate, acquiring 960 customers in eight months was going to be a monumental task. This reasoning was further challenged by the fact that they did not have a good track record for customer retention. The team's response was that, if they did secure investment, they would be able to hire a sales and marketing team and achieve those numbers with ease.

The BD often spoke about how they experienced a lot of 'churn'. Their software seemed to serve as a gateway technology; after using it, merchants recognised the benefits of such a system but also concluded that they could do better than ProntoPOS. The reasons for this were never fully explored while I was with them. Yet again, this was another problem that would also be resolved by an infusion of cash. The customer figures were not a projection as much as it was a promise about what investors could expect if they provided the funds to bring it about. This was typical of arenas of development as arenas of expectation (Bakker et al., 2011; Borup et al., 2006; van Lente, 2012).

It was clear that Pronto would have to engage in user education in order to enable them to optimise their use of the software's various functionalities. Based on my survey, most of their market demographic used paper ledgers and receipt books to keep track of their sales and inventory. I also presented the unwelcome finding that those who had participated in the survey were resistant to the subscription model that ProntoPOS

currently offered; preferring to pay for the system upfront or for a limited time. Payments in perpetuity did not appeal, no matter how small. Another, sticking point was the fact that Pronto's system was compliant with electronic taxation regulations. Retailers preferred to have the option of managing their reports to the Kenya Revenue Authority (KRA). ProntoPOS had been designed to comply with KRAs regulations.

Testimonials for Social Enterprise Arenas

In order to operate in the social entrepreneurship arena, it is important to characterise clientele as low-income. Pronto had also attempted to craft a pro-poor narrative in order to tap into the grant funds offered to social enterprises but was unable to replicate their successes in the commercial pitching arena. They were unsuccessful in representing their urban, retail merchant end-user as needy, and therefore attributing altruistic motivations to their work. Reframing them as small business owners, did not successfully tap into the development imaginary. This, even though reducing shrinkage for a small business owner would probably have significant effects on their level of income.

LightUp's sales agents are known as 'officers. Officers attend training workshops in Nairobi where they are trained to sell the lamps to parents of school aged children using improved educational performance as a draw. When conducting telephone surveys on behalf of LightUp, I discovered that LightUp officers rarely, if ever, interacted with customers in their capacity as a parent seeking to improve their children's performance at school. In fact, many of the lamps were sold to teachers or

in markets, to random customers. Even though the officers had not stuck to the plan, I, nevertheless, asked customers if they had noticed an improvement in their children's study time and education performance after purchasing the lamp. I expected some positive reinforcement, given that the narrative seemed logical. It was not a surprise that since the lamps had not been purchased with studies in mind, respondents were not taking note of whether their children were studying more and/or improving their performance in school, as a result.

During the phone survey, I established that the lamp's users were particularly interested in the fact that it eliminated the cost of buying kerosene from their household budget. A day's supply of kerosene was about Ksh. 20, which works out to Ksh. 600 per month. LightUp's solar system paid for itself in seven months. LightUp was aware of this and made mention of it in their materials. Given the founder's own background in 'clean tech', it seemed that the elimination of kerosene from the household budget, rather than educational performance, would be the narrative that LightUp would have centred in its communications. The emphasis of their narrative however was educational performance of school-aged children. Instead of statistical data on school performance, LightUp produced other kinds of information, primarily visual, to support the key element of the narrative, which was that their imagined user was a school-aged child in need of light for studying.

LightUp's narrative emphasises improving the educational performance in school-aged children by providing them with steady, reading light in the evenings. It also

tapped into the imperatives around rural electrification. LightUp's narrative attracted interest and resources even though, there was no data that demonstrated that the lamps led to improved performance at school or that they did increase study time. This was evident because I was tasked with gathering this data through the aforementioned customer survey. This is not to say that LightUp was not having social impact—By allowing customers to pay in instalments, LightUp made the $40 lamps, though available in local supermarkets, more affordable to low-income earners in rural areas. Households were also able to eliminate kerosene from their household budget.

In November of 2015, I had an opportunity to travel to the field with LightUp's MD. The travel group to Laikipia included three others, invited a by the LightUp MD because all four of them had been recognised by an international institution as young, local actors who have made positive impact in their communities. Maggie[23] provided educational software to schools in urban slums. She had previously worked at an iHub affiliated educational technology (edutech) start-up. Peter had a company that sold reusable feminine hygiene products to schoolgirls. His was a particularly successful social enterprise—even featured in an international business magazine. He had plans to create an app that would allow other traders to make use of the product distribution

[23] Names have been changed.

network that he had established to distribute the hygiene products. Travelling in this milieu, I had good insight into the start-up ecology and how actors shifted identities and fabricated narratives in order to tap into resources set aside for particular categories: digital, social enterprise, fintech, edutech, etc. It was during this trip that my interest in unpacking these dynamics arose.

We were welcomed warmly at all our school site visits. LightUp's Managing Director was very personable and quickly developed a rapport with teachers, students and principals alike. Prompting them to talk to us about the difficulties that their students faced. We took pictures often. Even though I had gone to high school, in a rural, government-run school and I knew first hand that economic disparity did not reflect a simple rural-urban correlate, I still found that I was surprised by the range in standards of living of life of the people we encountered, just as they did in the city. To illustrate, one of the schools we visited was a primary school catering to internally displaced children another, a boarding, secondary school had an on-site bakery. Both were government-run schools. The trip was eye opening about the low-income consumer in a multitude of ways. Many in the agricultural areas, are generally small holder farmers who own their homes and the land on which they live out their lives. Trips like the one we were on generated the visuals and testimonials that were shared with donors through the website, pamphlets and annual reports. LightUp's webpage, which comes in an English and Swedish version, is replete with pictures that contrast children studying using kerosene lamps versus solar powered lamps. This trip made it clear that

the educational attainment story, though well-intentioned, could only ever be anecdotal.

7.6 Mistrust of New Frontiers: Placed Based Narratives on the Moral Economy

There is a tendency to ascribe pathology to the geography. Just as the state was characterised as neopatrimonial and/or incompetent by developmental configuration doctrine, similarly, it is the locale and its actors that is thought to embody these perverse outcomes. The frontier narrative is one that is used to excuse the moral economy. Narratives of frontierism make questionable behaviour excusable.

> And if you want something to work here, you really need to make sure that you implement on everything, on all the details, nothing's taken for granted. Someone says that he's doing it, doesn't mean that he is doing it. This doesn't just go for Kenyans; this goes for Europeans that are here too. They get some sort of like waiver; I don't have to behave in a good way when I am in Africa. I can just sort of get drunk every night and not show up for meetings and stuff. I have been screwed by two individuals here since I moved here […] you just have to accept that [….] you have to build it into your calculations and your forecasts. […]. Build that in from the start, then you can feel quite good with yourself—I actually predicted how much I would get screwed on this one, and you still make a good deal. You make more margins than you would in other markets. I think those challenges really come from, I don't want to categorise too much, the Brits really screwed up this place. I am sure that there are many good Brits and I have lived in London for eight years and I think it's very nice [….] They didn't send the best educated, smartest, nicest people here; they send the people that they wanted to get rid of. Have you heard of Happy Valley? [Interview, Founder, LightUp]

LightUp's founder characterises the issue as 'cultural'. If we agree that culture is situational rather than immanent—then the moral economy of the development arena creates a culture that produces moral hazards and encourages fabrication. This resonates with the idea that morality is "situationally appropriate" (Barnes, 1989, p 28). The respondent expresses this recurring idea that there is a pathology[24] to the conduct of business in Kenya, and that it was contagious. Even, Europeans who lived in Nairobi, also tended to develop the malaise. There is even an attempt to absolve Kenyans by blaming the crop of British settlers. The founder expressed a point of view that he frequently reiterated, that Africa was not solely responsible for its low status in the world. Narratives about how places are new frontiers, are often permission to act as if it is indeed the Wild West. For entrepreneurs, there is an incentive to reinforce this narrative infrastructure because it is what some selectors expect of the locale. In ICT4D in particular there is a market for technological narratives about technologies that ameliorate the moral economy or of founders who subvert them. In fact, capitalism

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[24] The narrative about corruption in African countries is oft repeated. I propose that if one considers the global financial crisis, The Panama Papers or the antics of the CEO of Theranos, one might conclude that the world is, and has always been, full of trickery. Trickery does not need domestication, it seems to rise up out of societies, naturally.

is the corrupting influence. Not only does it incentivise certain behaviour, its tendency to restructure society and commodify relations erases pre-existing social structures that modulated behaviour (Cindi Katz, 2004; Whyte and Wiegratz, 2016; Wiegratz, 2010).

While its enactment produces heterogeneous outcomes and materialities (Barry and Slater, 2002; C. Katz, 2004), homogenous capitalism alters the sociocultural fabric, and how societies view progress, knowledge, morality and power (Cindi Katz, 2004; Mbembe, 2001b; Wiegratz, 2010; Zeleza, 2009). “The frontier, then, is not a natural or indigenous category. It is a traveling theory, a foreign form requiring translation” (Tsing, 2005, p 31).

Grant Brooke, CEO of Twiga Foods reported that one of the reasons that their firm had been successful is because they did not trust anyone, other than their own company.

> ‘Own your problems’ is fundamental to the Twiga business design: we do not outsource core business functions. That would simply be too risky at this point. We do not easily trust outsiders, consultants, brokers and contractors. In our experience they will let you down more often than not. While it is great to have eco-systems where you can outsource 50% of your work to pre-existing providers, I have a giant list of examples showing that this is not the case here. Hence, if you can control it, control it. (Brooke, 2018)

Similarly, during the interview that preceded my conducting participant observation at Light Up, the founder had spoken fervently about issues of trust and needing to be careful about cheating and corruption in Kenya. Once I was embedded in the firm, I could understand his unwillingness to talk about the details of the problem that he was

having with Officers not remitting payments. It occurred to me that donors for whom the social enterprise model meant long-term sustainability would not have appreciated this news. LightUp's founder explains actions (his included) as a facet of a moral economy that emerged from the geography, rather than the structural relationship that the geography had with global institutional imperatives. LightUp acted in ways that likely would have been frowned upon in the founder's native Sweden but he deems appropriate within this context.

7.7 Fabrication as Collective Action

Entrepreneurs are not alone; Silicon Savannah and its institutions are implicated in the moral economy. Malleability is an actor strategy for dealing with rigidity (Lok, 2010). There is a line beyond narrative flexibility, which when crossed is considered unethical misrepresentation. This narrative flexibility is not an attribute only of technology firms. Recently, a narrative about Africa's growing middle class has since been shown to have emerged from a change in how the African Development Bank defined 'middle class' (Melber, 2016). The result was a rise in the estimates of middle-class Africans. The banks aim was to change the narrative about African in order to engender the interest of investors and increase capital flows to the continent (Melber, 2016). The Africa rising narrative creates expectations of market potential based on the idea of a growing African middle-class (Beresford, 2016; Bond, 2016; Perry, 2012; The Economist, 2011; van Blerk, 2018). Later, it is revealed that the data that indicated a growing middle class stemmed from a generous interpretation of middle class by the

Africa Development Bank (AfDB), which was seeking to encourage foreign investment. At a smaller scale, organisations like incubators, 'hubs', co-working spaces are also tasked with stimulating the interest of philanthropic, development configuration, state, capitalist actors in local firms.

> Helping to sustain interest and to create hype about applications, entrepreneurship and start-ups in mobile technology was fulfilling. Apparently, this may have been at the expense of other IT sub sectors - an outcome that we did not quite anticipate. The ICT Authority and iHub were co-protagonists in this. The substance would always come behind the hype, and that may continue to be the case (Kieti, 2015)

Kieti's point of view is that all actors, except selectors, are 'in' on the game. From his perspective the problem with this game is that there are authentic technology production systems that are obscured by the hype. The blog post excerpt below a different tech blogger warns and chastens other actors against allowing the fabrication of narratives to become a norm.

> Running a legitimate technology enterprise in Kenya is not an easy task. […] Technology entrepreneurs have sought solace in a community that has over the last five years grown to global recognition moving from the experimental hacks to real businesses that are drawing investor interest as they identify new niches or disrupt old guards. As any community grows and value is created, a wide cross-section of players will be attracted by the opportunity and not everyone has good intentions. […] We have seen different shades of people; [revealing] *more to [about] culture, principles and ethics than color*, come into contact with the community. The expectation is that we should, over time learn to quickly profile and re-profile those who wish to be part of the community as well as those in it, looking for the tell-tale red flags that would trigger necessary interventions. As

> we continue to evolve, our gut must increase in sensitivity to ensure that we are never caught off guard whether by *vulture capital, self-interested mentors, rogue talent or even a misinformed government*. The onus is on the community to create systems and processes that will expose those with ill motives or questionable ways of work and we must not shy away from exposing and purging from our midst those who go contrary to decency and common sense. There are no sacred cows either; veteran or newbie, funded or bootstrapped, deep pocket venture capitalist or angel, we must be looked at from the same lens. (Blog, Njihia, 2016)

The excerpt indicates that a variety of actors have been implicated in inhabiting positions that are considered fraudulent or exploitative. The power of these actors, particularly in relation to one another is an important lens through which to view these activities. Kachwanya provides a clear example of how other actors, aside from entrepreneurs can be implicated the fabrication of Silicon Savannah. In the post, they caution other bloggers in the arena about being co-opted into the moral economy that trades on half-truths:

> At the pitching events like DEMO Africa, Pivot East, start-ups give questionable figures (stats). Most investors are not from around here and hence they would take what they see or hear at such event as it is. Of course, they would do the background checks but as we all know these days, Google is the mother of all the checks. Meaning the stories written about such start-ups are their source for verification. And that is how to get involved in a collective lie. I think it is time the writers redefine what constitute success and coolness in the business cycle. The obsession, with the amount of money people make is misleading at all levels. Successful entrepreneurs are out there to save, change, remake or redesign the world. In the process they make lots of money. […] So dear writers/reporters/journalists/bloggers …..it is time to help the industry grow based on a better and honest foundation. (Kachwanya, 2014)

The author feels that by not acting as good legitimators and gatekeepers, other actors in the arena inadvertently become complicit in the production of hyped entrepreneurial narratives.

7.8 Gaming the System: An Adaptive Moral Economy

This chapter explains that the inherent asymmetry between entrepreneurs and funders, leads entrepreneurs to adopt strategies to meet their needs in a context where they lack discretionary power. This includes creating entrepreneurial narratives and enacting performances and identities that are most likely to be legitimated by 'selectors. Actors understand that even though the logics might not be fitting, they are unable to alter them (Abbott, 2005). Their activities represent a subversion that indicates the lack of substance in the processes of legitimation, and in the discourse.

This study considers the strategic agency of actors who are operating within limiting promissory arenas where they do not control the parameters under which they will be deemed successful. Expectations take on prescriptive qualities. In Silicon Savannah, entrepreneurs are constrained by the specificity of expectations that I argue emerge from a broader meta-narrative about geographies of knowledge production and progress., This is evident in how digital entrepreneurship is performed. The expectations that emerge from this discourse exhibit a coloniality that might not be evident in another locale. Evidence of this is that entrepreneurs in Silicon Savannah often construct their promises to *meet* expectations, rather than to *create* expectations. While technoscientists elsewhere are talking about technological breakthroughs,

digital entrepreneurs in Nairobi are touting Africa's growing middle-class or social impacts.

Once the work of creating institutions and legitimating infrastructures for a discourse is complete, it becomes difficult for actors to alter the logics under which they operate (Abbott 2005, p 245). Actors must then find ways to engage with the infrastructures that are in place. This produces a variety of strategy games that aim to subvert the conditionalities, which ultimately what the expectations represent. The first strategy is aligning existing practices with the expectations embedded in the narrative infrastructure. When alignment is not possible, fabrication is the option. These recourses are evidenced in entrepreneurial performance and in narratives. Lizardo (2017) explains that:

> Persons can display declarative abilities to produce knowledge about (public) culture that they do not know how to use (Collins and Evans 2008; Swidler 2001a), or they may possess implicit cultural skills with no publicly accessible declarative counterpart (p 99).

All analytical frameworks, including post-colonial theory can be criticised for attempting to be an overarching explanation for all global dynamics (Lentin, 2019; Zeleza, 2006). There is a danger, according to scholars, in gazing too long at the metaphorical post-colonial sun and seeing is as the explanation for all relations. Earlier I indicate that while the discussion on white fronting might not come us a surprise to actors in the arena of development. They would, however, probably be surprised by an analysis that connects it coloniality. Not all of them would. During the town hall

meeting on Angani, one of the guests of honour, the head of Investment Banking at a local commercial Bank spoke after being briefed that we were there to bring closure to a dispute between former friends, who together had developed Silicon Savannah's first institutions. Their relationship had developed into an investor-founder relationship—a mirror perhaps of the development of the arena into a formalised, rather than casual relationalities and institutions. An attempt at an investor takeover had disrupted the arena which in many ways is rooted in these relationships. The banker, in response, offered a book recommendation, *Culture and Prosperity: Why Some Nations Are Rich but Most Remain Poor* and spoke about his struggle to reconcile the values that he was taught "at home" versus the moral economy that is advocated in the elite education that he received. He explained that at home:

> My upbringing taught me that I owe the society. I battled with these ideas of how does one make money? Why should one make money? Most people who are successful are not primarily driven by money. I had a folksy way of doing things. If you are not aware that people look at life differently you may misunderstand intentions. Appreciate that we have different cultures. [Commentary from banker]

The conclusions that he had drawn from observing the debate encapsulated that Silicon Savannah represented a struggle between situated understandings and privileged, received modalities. The implication is not that received modalities are always inappropriate or perverse—only that they have more power than better approaches, even when they are inappropriate and perverse. The banker further declared that the social Darwinism that was being espoused by some in the room was a caricature of capitalism. In his words:

> […] unsuccessful capitalism has the characteristics of brutality. It is not a recipe of a successful society. […] part of the legacy of colonialism is that you never saw proper capitalism. You saw imperialism. [Commentary from banker]

This treatise challenged the perception of business conduct as a universal, fixed and rational form of knowledge, rather than a cultural particularity. And supported a view of multiple capitalisms and capitalism as a relational attribute, where only a certain form creates perverse incentives and altered moral economies (Wiegratz, 2010). Other scholars would argue that capitalism is in fact operating as it should, even modulating and commodifying friendships. The issue is the frequent imbrication of economising activity and capitalism. There is value in illustrating the differences and heterogeneities in economising activity and legitimising them. Gibson-Graham, Tsing, Ho and others have illustrated that this is a common problem of critiques that illustrate capitalisms ills and characterise capitalism as over determining all social relations. Capitalism is not the creation and use of markets (Cindi Katz, 2004; Whyte and Wiegratz, 2016). It represents a situation where private capital controls the factors of production, and the commodification of labour, artefacts and relations (Cumbers et al., 2010; C. Katz, 2004; Neveling, 2017; Whyte and Wiegratz, 2016). It also leads to the overlap between selectors and holders of capital.

Following on from this other scholars remark on the tendency for critiques of capitalism and coloniality to valorise subalterns, and frame them as superhuman agents (Johnson, 2003; Wynter, 2003). The actors participating in Nairobi's telecommunications arena are hardly superhuman. The longer actors are involved in

trial and error experiments on how to make their concerns work in this environment, the better able they are at navigating paradoxes and at gaming the arena of expectation and legitimation.

In fact, calculative action, like white fronting and developing frontier narratives, is a narrow form of agency since actors still acting within circumscribed ideas about who can participate and how (Bourdieu and Wacquant, 1999). This for some, is an acceptable status quo since the logics allow them to view the exclusions that emerge through comfortable lenses. They argue that these patterns represent social capital and kinship ties in action, that they might be meritocratic as they select for knowledge and expertise or trustworthiness (Bourdieu and Wacquant, 1999; Pager and Pedulla, 2015; Pager and Shepherd, 2008). Constrained actors are manoeuvring strategically through these asymmetric entanglements and awkward encounters. In light of their contexts, their choices makes sense (Amrute, 2019, 2016; Tsing, 2005).

8 THE FUTURE OF ARENAS OF FABRICATION

Progress is the freedom to define, produce, accumulate and utilise knowledge, rather than convergence towards some socially constructed ideal. What might sound like a straightforward claim is a contested position. Global processes have been predicated on convergence towards an EuroAmerican ideal of human development (Amin, 2002; Anderson, 2009; Krishna, 2009; Massey, 2002; Moore, 2001). Technoscientific knowledge has been used as evidence that this outlook is natural. Realist proponents of convergence point to global stability and poverty reduction as successes of globalised modernity (Gavin, 2004; Gavin and Lawrence, 2014; John Williamson, 2007), where modernity is constructed as primarily EuroAmerican and technoscientific. Critical multilevel analyses, however, uncover the negative effects of homogenised modernity. This research has examined how the ability of localities to develop suitable technological fixes is limited by a hegemonic digital economy discourse. Actors' strategies in Silicon Savannah are shaped by the coloniality of knowledge production and the particular way it structures an arena of development.Currently, they are incentivized to participate in a process of mutual legitimization that leaves little room for creative, situated and alternative modalities for ICT technology production to emerge. Instead arenas of development aim to meet certain expectations in order to be rewarded for sustaining an ultimately problematic and colonial narrative infrastructure.

Societies can conceive of progress, knowledge and innovation in a multitude of ways (Nkwi, 2015; Pavitt, 2006; Sharma, 2019) (; but a Euro-Americanised narrative of modernity circumscribes discursive, and therefore its material, dimensions (Amin, 1972; Escobar, 1995; Ferguson, 1994; Grosfoguel, 2007; Harvey, 2006; Latour, 2007; Neveling, 2017; Sabaratnam, 2017; Shakya, 2017). Technoscientific knowledge becomes associated with particular geographies leading to an idea of progress as social convergence (Chen, 2010; Fanon, 1952; Hecht, 2011; Maldonado-Torres, 2008; Massey, 1993; Mavhunga, 2017a; Sabaratnam, 2017; Wallerstein, 2004, 1974). This research contributes to scholarship that demonstrates that technology production is socially determined and historically contingent. Comaroff and Comaroff (2012) argue that Africa is a site where one can observe the logical conclusion of the imposition of neoliberal modes of thought. In which case, speculation about Silicon Savannah's future has implications for other arenas of development, even outside of developing country contexts

The approach of this thesis is to analyse how changes in discourse, affect action. The process was inductive, the goal at the outset was to observe practices in Silicon Savannah and see what sociological analyses can be derived from the themes that emerged in the data. At the time of research, questions whether: a) Silicon Savannah is overhyped; b) local techentrepreneurs have the requisite knowhow and skillsets; c) entrepreneurs were employing deception to attract investment and d) white, immigrant founders had an unfair advantage over local entrepreneurs were recurrent themes. Understanding these themes required analysing the interaction between the arena of

development and its broader structural environment. The finding is that differences in scale and time period produce different contexts for macro and micro-level actors. They are all, however, engaging with the positionality of being in a post-colonial arena of development. All societies are operating within an asymmetrical world system that reinforces marginality of certain actors, ideas and locales (Amin, 1972; Bhambra, 2007; Bourdieu and Wacquant, 1999; Chen, 2010; Comaroff and Comaroff, 2016; Escobar, 1995; Fanon, 1961, 1952; Harding, 2009; Harvey, 2006; Cindi Katz, 2004; Latour, 1993; Massey, 1993; Mbembe, 2001a; Ndlovu-Gatsheni, 2018; Ngũgĩ wa Thiongʾo, 1986; Suchman, 2011; Wallerstein, 2004, 1995).

Ethnographies from the 'global south' which take their geohistory as an important analytical frame are only recently starting to emerge (Reyes and Garrido, 2019; Rinehart and emerald, 2016). In this case, the field site is a technology commercialisation arena in an African setting. Structures of coloniality, initially set up with a vision of connecting a geographical periphery to an imperial centre, persist in new forms lending validity to certain knowledges and not others.

> Some visions have power; others don't. Such a distribution of authority begs the question of the political nature of promises, hope, and hype and forces an inquiry into how futures are legitimated (Selin, 2008).

Some scholars argue that heterogeneity and alternatives still exist even when universals are imposed (Tsing, 2005) and that in fact some universals should be imposed for the greater benefit of society (Gavin, 2004; Gavin and Lawrence, 2014; John Williamson, 2007). Scholars in innovation studies have lamented that

> […] the focus on the capacity of human beings to construct their world-views, to act and to generate meaning, restricted researchers to relatively narrow analyses, making many STS practitioners critical of general theoretical frameworks […] making it very difficult, if not impossible to take a normative stance. (Martin et al., 2012, p 1194).

While this may be the case in academia, in many cases a universal or normative stance has indeed come to be taken-for-granted. One of the results, is a framing of alternatives and anathemas, and simple variations on normative stances as alternatives. (Besbris and Khan, 2017). In my view critical STS and other critical scholarship expands the possibilities for analysis by engaging with the complexities of the oversimplified meta-narratives. They do well also to remember that realist constructions of the world do still have power, and structure our own disciplines and theoretical frameworks. Not taking normativity for granted opens the knowledge base up to the existence of alternatives (Besbris and Khan, 2017; Mears, 2017). Decolonial analysis has currently critiqued academic disciplines for being inherently rooted in Eurocentrism. The answer is not to throw out the baby with the bathwater but to salvage theories than can be applied in other places (Mbembe, 2017, 2016a). STS's symmetry principle, is particularly amenable to transnational investigations (Law and Lin, 2017). The symmetry principle encourages us to treat geographies of knowledge with impartiality. Armed with these tools, this research yields an analysis of actor's responses in an environment constrained by a particular view of technoscience and progress.

8.1 The Underlying Technopolitics of the Knowledge Economy

Researching Silicon Savannah leads to a reckoning with Kenya's place in the world. It is not a given that the dominant view be pre-occupied with progress as it is currently framed, i.e. as catching up with the West (Díaz Andrade and Urquhart, 2012; Escobar, 1995; Latour, 1993; Olivier de Sardan, 2005a; Ravindran, 2019; Zheng et al., 2018). This leads to particular rationales for technology development which are rooted in assumptions about the value of certain kinds of economisation and entrepreneurialism (namely their neoliberal capitalistic forms) relative to other social arrangements (Comaroff and Comaroff, 2012; Marx, 1976; Mbembe, 2016b, 2012, 2001a; Mkandawire, 2015; Moisio, 2019; Moisio and Rossi, 2019; Mudimbe, 1990; Quijano, 2007)

Supposedly universal policy frameworks and methodologies for technological commercialisation be they the Silicon Valley model, National Systems of Innovation, or Triple Helix have been developed with EuroAmerican geographies in mind. Those that are thought to be relevant for developing countries such as innovation below-the-radar, inclusive innovation and ICT4D also operate on the same modernising assumptions (Díaz Andrade and Urquhart, 2012; Moisio, 2019). They are underpinned by similar logics of development and ideas around modernity, science and progress. These concepts are inherently political, because they become frameworks for the design and implementation of policy

> As post-recession capitalist economies have come to be dominated by a new generation of high-tech corporations and start-ups that have increasingly urbanised capitalism, scholarly and public debates have particularly concentrated on the management of this novel configuration of global capitalism. Two approaches have particularly emerged: a neo-Keynesian proposal for a 'neo-entrepreneurial state', drawing on the lessons of the past decades of state-driven innovation policies, and a neo-Jacobsian perspective (inspired by the work of urbanist Jane Jacobs) on self-organised economic governance reflecting the endogenous potential of urban ecosystems. (Moisio and Rossi, 2019)

This thesis has evidenced that both these perspectives appear to be at work in Silicon Savannah but rather than being separate modalities, the state-led approach and the independent arenas of development are entwined and reliant on one other. The government invests in infrastructures on which the emergence of arena of development relies.

The policy success of discourse is dependent on stories which affirm their credibility as universal best practices. Recognised representatives of the locale, like the membership of KICTANet may not be directly seeking to validate a discourse or even aware of their role in the mutual legitimation arrangement. They are co-opted into various mechanisms for managing consensus such as international government regimes like Internet Governance Forum, and WSIS. Local actors embody particular expectations, identities, language and values because of the benefits that are promised. These promises are part of a narrative infrastructure that rewards alignment. Alignment is rewarded because of what is at stake—in contested and politicised global governance landscape (Moisio, 2019; Moisio and Rossi, 2019). Governance over the

internet, economisation of digital technologies, and more broadly how we envision progress are discourses that represent a variety of interests. These narratives become grist to the mill for the continued advocacy for and mobilisation of these logics as best practices. It is therefore not benign to assume that metaphors and models are universal.

> […] the motive behind rhetorical events is a shifting relationship between constraints and resources. We think this framework can help rhetorical critics better understand the dynamics behind rhetorical events within the postmodern world (Herndl and Licona, 2007)

All manner of actors are seen to espouse certain perspective while their actions reveal that their experiences and modes of existence do not mirror their claims. State actors can enact resistance because they hold some authority. Ultimately it is in actors' best interests to demonstrate congruence with the prevailing discourse. The government of President Moi goes from openly defying the didact to liberalise the telecommunications sector and privatise KTPC to simply delaying this process and enacting discursive alignment or paying lip service to the expectations of international development institutions.

The Kibaki government is ideologically better aligned with the liberal discourse of the day, but it still does not wish to relinquish its role in development. Under the new political economy, state actors interested in the promise of industrial development through an ICT sector, engage in the processes, create the institutions and invest in the infrastructures that are indicated as prerequisites for an ITES-BPO industry. The entrepreneurial state's plans to foster competitive advantage by attracting investment

in its ITES-BPO sector do not, however, materialise. This reveals that within this particular arrangement the state and entrepreneurs are in the same position—the are enactors hoping to meet the expectations of selectors.

8.2 International Development Philosophy and Technosolutionism

Digitisation, connectivity, ICT4D (Information and Communication Technologies for Development) and the digital economy, as part of the technoscientific knowledge areas, are part of a teleological, modernising discourse about the future (Chipidza and Leidner, 2019; Dei and Anamuah-Mensah, 2014; Díaz Andrade and Urquhart, 2012; Zheng et al., 2018). Development discourses claim to have evolved away from modernisation theory (Sen, 2001; Yusuf et al., 2009), but their views on globalisation and inclusion continue to be underpinned by particular notion of modernity rooted in the trajectory of EuroAmerican nations (Dei and Anamuah-Mensah, 2014; Mbembe, 2017). A number of authors argue that in the process, marginalised actors' individual and collective preferences and alternative modes of existence are erased (Anderson, 2009; Dei and Anamuah-Mensah, 2014; Latour, 2007; Mbembe, 2001a; Mignolo, 2017; W. D. Mignolo, 2007; Ndlovu-Gatsheni, 2018; Oloruntoba et al., 2020).

> Intimately connected to these critiques of continuing colonial power and neoliberalism are critiques of a different stage of the colonial project – international 'development'. As Sardar (1999) notes, the very term 'development' is stuck in Eurocentric, linear notions of civilization and literacy. As Mehmet (1999) enthuses in his examination of the economic development theories, the causes of the persistent 'underdevelopment' of Southern nations rests on the shoulders of the West who insisted on the rationality and superiority of their

> models, ignoring that they did not fit the realities of Southern nations and refusing to consider the rationality or appropriateness of Southern models. Development has always been colonial, a 'softer' approach of imperialism, a Trojan horse hiding the same insidious forces ((Dei and Anamuah-Mensah, 2014, p 35).

A counter argument might be, not that liberal discourses on development are not colonial but instead that despite their coloniality they assist people who might otherwise be overlooked. In their review of ICT4D literature Chipidza and Leidner (2019) identify three main rationales for ICT4D as summarised in their abstract:

> We find that the very meaning of development varies, with four meanings of development emerging from the literature: (1) development as increased freedom, (2) development as expanded inclusion, (3) development as increased economic productivity, and (4) development as improved well-being. An ICT might succeed according to one meaning of development while simultaneously hindering achievement according to another meaning. As revealed by our analysis of the literature, these four perspectives suffer from some limitations, not least among them being the imposition of colonialist views of development on the recipients of the ICT4D (p 145).

This analysis reveals that 'development' has a variety of aims, some that are even oppositional. In this thesis, I examine the tensions that emerge particularly between aims 2 and 3. There is a distinction between how private sector and the developmental configuration conceive of the desirable outcomes in these arenas. While they might both seek inclusion of users, they do so for different reasons. The developmentalist configuration focusses on the inclusion of marginalised users and the production of tools that ameliorate their lives and increase livelihood opportunities. Apparently, this contrasts with the private sector focus on users as consumers of commercial products.

I argue that both are two sides of the same coin, not only because they are embedded in prescriptive modernist philosophies, but they often produce the same results—recruiting actors into exploitative patterns of consumption (Bourdieu and Wacquant, 1999; Díaz Andrade and Urquhart, 2012; C. Katz, 2004; Khader, 2018; Suchman, 2011; Suchman and Bishop, 2000; Tsing, 2005; Wallerstein, 1997, 2004; Zheng et al., 2018). At the macro-level, the global political economy and therefore international development current thinking is that progress requires inclusion into capitalist global society (Anderson, 2009; Cindi Katz, 2004; Massey, 2002; Neveling, 2017; Wallerstein, 1997, 2004), which often also means integration into the global economy. Capitalism, in this research refers to privileging capital over other factors of production like labour and nature. One attribute of capitalism is that it commodifies (Cottom, 2019; C. Katz, 2004; Thrift, 2005). It imbues relations, objects and practices with a tradeable value (Cottom, 2019). This is not problematic in and of itself, however, it means that practices, relations, artefacts, devices, cultures literally anything that has not been commodified is treated as not having any value (C. Katz, 2004). An oft cited example is that of domestic labour. Critical feminist discourse on domestic labour and oft cited analyses of practices like gifts and exchange provide examples of non-capitalist economic relations (Elder-Vass, 2016; Mauss, 2011). Alternatives to capitalism exist but the paradox is because they are not valued under capitalism, they are not seen as equivalent (in terms of value) alternatives. Capitalism "works to encircle and enclose our economic imaginations […] we fear that there is no alternative, or, alternatives are constantly deferred" (Appel, 2015).

That there are a variety of approaches to livelihood making, and that economization is not synonymous with capitalist relations are important ideas for an analysis of the digital economy that seeks to take nothing for granted. But it is also important not to take for granted the ontological realities that emerge from powerful discourses that render social facts as facts (Barnes, 1988).

Ho (2005) asks:

> To what extent do critical theorists, despite their professed awareness of the contingencies, constructed effects, and productive strategies of global capitalism, take capitalist pronouncements at face value, allowing representations of globalization to stand for the world "as it is" instead of querying the multiple internal contradictions, complexities, and implosions in their specific worldviews and practices? (p 68)

This research intends to illustrate how the narrative infrastructures and it's the processes of mutual legitimation that are internal to it allow capitalist globalisation to be take for granted. While critical social science analyses of heterogeneity and contingency in economic practices reveal the incompleteness of meta-narratives of progress (C. Katz, 2004; Nkwi, 2015; Nyamnjoh, 2013b), belief in a singular capitalist logic, shapes our world. Trulsson (1997) who has conducted a study of entrepreneurs in Tanzania during the structural adjustment era uses Long's actor-oriented approach with the understanding that:

> […] the social world into which I, as a researcher, enter is not an ontological homogeneous unit, but one made up of individuals with differing perceptions and social practices. Simply put, in my research all Tanzanian entrepreneurs do not

> share the same perspective on reality and the ways they act from their respective understandings must be taken into consideration if I as a researcher am going to understand their activities in an intelligible way. Ideally, therefore, the conceptual framework to be developed from such research is one that accords priority to the subjective understandings of the informants. What they understand as real us real to them also in their actions. However, this should not obscure the fact that their subjective understandings are affected by the structures which guide their action. After all, as basic premise of this research is that action and structure mutually shape each other (p 43).

Certain visions have power, the power to be self-fulfilling and produce social realities (Selin, 2008). Kenya's telecommunications sector is an ideal site for thinking about these issues.

This research challenges taken-for-granted thinking and queries the world view of research participants while taking their ontologies seriously. The so-called 'tech arena' primarily represents a particular mechanism for financing technology production. The performance of and co-opting capacities of capitalism has ensured that its rationales underpin almost all creative activities.

> What is most interesting about contemporary capitalism is how these juggernauts of finance and information technology and regulation have interwoven with new developments to produce new possibilities for profit. (Thrift, 2005, p 5)

Even the global practice of foreign aid has come to incorporate capitalist rationales into how it delivers 'assistance'. Like any profession, the developmentalist configuration develops an ecology that consists of infrastructures and linkages that validate its existence (Abbott, 2005). This is not to say that places around the world

could not benefit from expertise that improves the welfare of people, but the parameters of this is often determined by actors who are inculcated and professionally interested in bringing about a particular vision of development (Olivier de Sardan, 2005, p 25). The assumption is that progress means convergence to EuroAmerican modes of economisation and social production (C. Katz, 2004). This thesis argues that this is not a given, and the universality of pathways to progress, technological or otherwise, should not be assumed. Katz (2004) asks that we catalogue the disparate effects that capitalism has around the world. This is the role of ethnographies such as this one, to characterise these systems and relations from a particular perspective (Bear et al., 2015b; Ho, 2005). Therefore, contributing to a more holistic understanding of these relations and their effects. This thesis is an effort to catalogue the effects of a capitalist, knowledge economy discourse that promises progress, on Kenya's telecommunications sector.

8.3 Entrepreneurial Strategies for Success in the Context of a Globalised Arena of Expectations.

The evolution in Kenya's telecommunications is analysed as response to changes in the digital economy rhetoric. The imperatives that guide actors' decision-making in 1995 are different from the incentives that are present in 2015. It is important to note that the research analyses actors operating in different institutional contexts, and these produce different incentives, imperatives and typologies of agency. Silicon Savannah epitomises the pre-existing global hegemony of ideas and ideology over technological

progress (Anderson, 2017; Bourdieu and Wacquant, 1999; Latour, 2007; Massey, 1993).

I am particularly interested in the aspects of aspects of Silicon Savannah that turn out to be about the economisation of narratives (rather that the economisation of technoscientific knowledge related to digital technologies). The knowledge economy turns out to be a market for narratives that legitimate the knowledge economy. This is because these concepts are inherently political and ideological (Moisio, 2019; Moisio and Rossi, 2019). The study reveals that in this marketplace of narratives actors attempt to 1) align their practices to the prevailing discourse. If they find that they cannot do so, they 2) fabricate alignment.

Actors whose practices do not match the narrative infrastructure characterise their processes in ways that, nevertheless, reinforce them. Apart from creating resonant narratives, they also build sociomaterialities that match the narrative infrastructure but also represent their 'true' practices. Pronto acts as a technology consultancy while also performing as an early-stage start-up. Start-ups engage in 'white fronting' in order to take advantage of the pattern matching that investors use to select investment-worthy startups. They are not selecting for knowledge, rather they are selecting for proxies of universality, which are actually proxies for EuroAmerican modes of conducting business. The visions of the powerful are performed and perpetuated whether or not they are representative of local conditions. We encounter actors who, aside from having to know how to run a business organization, also need to know how to wield

mythologies and expectations embedded in the global digital entrepreneurship narrative in order to drive interest and attract resources. Entrepreneurs who have been involved in this arena for some time are better able to navigate the paradoxes of the rhetoric and models of digital entrepreneurship. Chapters 7 evidences the perverse practices and moral economies that emerge when particular models are privileged in an arena of development. It is a moral economy that perversely incentivises fabrication, rent seeking and game-playing. These strategies represent calculative action and are expressions of constrained agency. Capitalism also produces asymmetric (class and racial) social relations (Bear et al., 2015b, 2015a; Gibson-Graham, 1997; Krishna, 2009; Tsing, 2015, 2005; Wallerstein, 1995).

The incentives of the moral economy of arenas of development encourage entrepreneurs to create hyped expectations (Bakker et al., 2011; Borup et al., 2006; Garud et al., 2014; van Lente, 2012; Whyte and Wiegratz, 2016). Start-up culture, valorised by popular media, informs the aspirations of individuals around the world because of its myths. Rather than a knowledge-based arena, digital entrepreneurship should be understood as a cultural arena where performance, and certain identities are used as proxies for capability. Silicon Savannah's start-up entrepreneurs are incentivised to develop narratives and performances that resonate with the dominant discourses on development. They do so in order to be seen as legitimate. This research has demonstrated that legitimacy is increasingly availed at the discretion of capital or by the holders of capital or so called 'selectors'(Bakker et al., 2011). When digital entrepreneurship arenas around the world evince sociomaterial similarities (Davidson

and Vaast, 2010; Katila et al., 2017) they reinforce theories that suggest that there is a singular way to go about making technoscientific knowledge useful to society.

There was a distinct privileging of actors who had ties to the West. They were regarded as trustworthy, and as experts. Proximity to the West by any means was incentivised. The question is whether this represented the arenas attempt to develop proxy measures for knowledge and expertise, or a signal of the persistence of colonial modality and its overlap with capitalism. The strategy of 'white fronting', for instance, indicates actors' awareness of the constraints and opportunities within the sociomaterial and narrative infrastructure of promissory start-up arenas that provide opportunity for certain actors to gain legitimacy and resources, while excluding others.

If understanding Silicon Savannah is indeed a way foresight strategy, we can presume that perverse moral economies where actors are incentivised to perform rather than enact technology production are to be expected, and more should be anticipated The recent Theranos debacle could be a case in point (Waltz, 2017) [25]. Aside from the

[25] "Theranos founder Elizabeth Holmes, a well-connected 19-year-old Stanford University drop-out, claimed her company, launched in 2003, could do practically any diagnostic test on a few drops of blood from a finger prick. Yet while the company grew to a valuation of $9 billion, courting breathless media

undesirable outcome risking investment 'fake' firms. The incentive to align with the common worldview and seek rents in the funding arenas that this makes available, translates into superficial engagement with the situated environment. It short-circuits the development of more appropriate processes, technologies and rationales for technology production. While actors are able to exercise forms of agency, they are ultimately disempowered by a promissory environment that does not require them to use or deepen their local knowledge and technical skills. Additionally, they are incentivised to engage in calculative action that changes the moral economy.

8.4 Coloniality of Legitimation Regimes

Given the legitimation and promises are core mechanisms of Silicon Savannah, it is important to categorise actors according to the distribution of power and/or the amount of discretion they have over one another. A key observation is that actors who had power in one context, might have limited agency in another. These nested power dynamics are not easily articulated or expressed, given the numerous ways in which one could organise them. Nevertheless, the state-actor who has to comply with structural adjustment programmes in the eighties, the third-sector actor contributing to

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coverage and TED talks, skepticism grew at the company's refusal to disclose details on how its platform worked […] "It was too good to be true," says Weissleder.". (Waltz, 2017)

a managed consensus of international internet governance regimes in 2005 and the digital entrepreneur looking for foreign investment in 2015, however, do share a geohistory and post-colonial positionality. The main difference in power asymmetry is that between enactors and legitimators. This research shows what is normative can emerge from assumptions and archetypes about what constitutes the ideal.

Scholarship in arenas of expectation employs a framework that distinguishes between enactors and selectors, and I put it to use here. This research shows that selectors like donors and investors often operate at an informational asymmetry. Yet, they are still able to set the agenda in these arenas. Their role goes beyond selecting—they are legitimators. Actors develop a variety of strategies, commensurate with their agency, for demonstrating competency and gaining legitimacy and gaining access to resources (Deuten and Rip, 2000). The least powerful actors have to play games where they appear be meeting standards that they do not have the power to change. The strategies for gaming the legitimation system that values and invests in knowledge products, indicate the power gradients and the directions in which they are flowing.

Deviation is regarded as an anomaly or failure, rather than as a challenge to the rationales embedded in the discourse. This is the paradox introduced by the necessity of mutual legitimation. Demonstrably, there is an awareness of paradox of legitimation amongst not only the entrepreneurs, but also amongst members of the developmentalist configuration. However, this awareness is often interpreted as confirming the need for more local learning. Whether it is skills development for

entrepreneurs, digital literacy for users, capacity strengthening for multistakeholder actors, resolving the discrepancy seems to involve configuring the environment so that it accommodates the supposedly universally legitimated practice, rather than developing locally appropriate solutions.

Capitalism and colonial asymmetry determine which ideas, discourses and technologies can travel, and in which direction. Those that are allowed to are labelled universal or cosmopolitan. I observed that that progressive, liberal world views and benevolent narratives seemed to indemnify actors from actions that might otherwise be considered problematic. This is a recurring observation made by anthropologists of development (Mosse, 2005; Olivier de Sardan, 2005; Sabaratnam, 2017). The moral hazard of intervention is to be blinded by good intentions (Latour, 2007; Sabaratnam, 2017). Since many in the digital entrepreneurship realm see their intentions as progressive and good, they were very matter of fact when talking about their good intentions as a sufficient means of ensuring fair outcomes. The underlying entwining of coloniality and capitalism cannot be overcome by the good intentions of champions for development. Consider Mark Andreesen's reaction to India's rejection of Facebook's Free Basics. India's objection to free internet was based on the issue of net neutrality and its economic effects on local internet service providers. Andreesen believes that internet access is necessary for human progress and suggests that it would have been better for India to have remained under British colonial rule (Seetharaman, 2016). While this view is extreme, it illustrates the dangers of a pervasive modernising perspective in technology and development.

8.5 Materialising Philosophical and Practical Alternatives

Ultimately, the most transformative change will emerge not only from shifting the power dynamics in the arena, and making it more inclusive, but from creating room in the global imaginary for alternative philosophies of progress, There is scholarship that departs from the view of development as "proliferating modernities" (Warwick and Adams, 2008, p 183). As this research asserts, there is a difference between pluralities that emerge from the implementation of a rubric for progress, and plural implementations of ideologies of progress (Lentin, 2019). Nyamnjoh (2010) points to the danger of the former:

> In this regard, domesticated development in Africa is greatly hindered, even as the evangelicals of universalism claim ever more mileage and converts for their one-best-way development model. Hence, the need to seriously revisit the dominant epistemological underpinnings of prevalent development research and assumptions, that are not always sensitive to the complex realities, predicaments and expectations of Africans as laboratories for negotiating conviviality amongst competing traditions, identities and ideas of progress (Nyamnjoh, 2010, p 1).

The inability to account for heterogeneity in modes of existence is often a critique lobbed at universalist models for economic development (and universalisms in general). A perspective on arenas of development that asserts that there is a specific methodology for the application of technoscientific knowledge in the production of artefacts, constrains the development of appropriate local sociotechnical imaginaries and arenas. It is within this view, that the discourse on innovation and entrepreneurship is currently located. This discourse emphasises the value of capital and capitalist

relations in technology production. The digital economy already includes alternative approaches to technology production and to economisation of technology production. These alternatives are hidden from view because they do not fit the current narrative infrastructure of innovation and entrepreneurship. I argue that this exclusion subverts the possibilities for inclusive technology development and is detrimental to the situated development of appropriate digital technologies.

An example is a project undertaken by one of the interview subjects. There is a SACCO for almost every job category and professional group in Kenya. The respondent aims to reconfigure the local financing mechanism of the SACCO (Savings and Credit Cooperative Organization) to cater to the risk profile of digital start-ups. SACCOS, however, generally shoulder uncertainty in short timescales—e.g. from one coffee harvest to the next rather than supporting a company for ten years before it can become profitable by outcompeting less financed rivals. How risk is perceived is a key determinant in the construction of opportunity. Geographic (and cultural) distance increases the unknowability of places and things. SACCOS rely on proximity and direct knowledge of their members. Venture capitalists claim that they are attempting to resolve the problem of a lack of information by using pattern matching in the selection environment. SACCOS have overcome this problem. It is the issue of long-term financing that remains. Perhaps, the solution is for venture capitalists to partner with SACCOS. A study of 'shopkeeper' digital firms has great utility and is likely to produce knowledge about local praxis around commercialisation of digital technologies.

8.6 Limitations and Issues for Future Research

The question of what alternatives exist to the status quo is not answered here. This is a factor of the methodological approach. An actor-centred approach analyses the data generated by observation of research participants like the SACCO solution presented in the previous section. I have provided some examples of firms that do produce revenue generating technologies, including Pronto but the focus of this analysis has been on fabrication. Other than analyses could seek to develop a framework for understanding alternative technology production practices.

A fellow student once asked, 'where is the artefact?' due to the emphasis on discourse and economic development. The choice of emphasising discourse in a sociomaterial arena reflects the gaps that are evident in STS critiques of innovation. Some of them emphasise materiality others do discuss technopolitics but often they do not challenge the underlying assumptions of schemas for technology production. Particularly, the problematic of glossing over the adoption of techno-capitalist modalities when coloniality structures global economic relations. One of the primary limitations was time. I intended, as part of the actor-centred approach to have research participants read a draft of this thesis. I wished to present my analysis to them and see how they responded, so that I could include their feedback from research participants in this thesis as another set of data. Another goal was to increase validity through data triangulation—gathering information on the same topic from a variety of sources. The amount of data that was produced by email archives, social media posts, interviews, documents illustrated the heterogeneity and complexity of the arena but made data

management difficult and elicited multiple lines of inquiry. It was difficult to discard themes that felt pertinent. The fact that I am from Nairobi, means that I continue to be inundated with information regarding the outcomes of situations that I observed during fieldwork. The existence of the data stimulates a desire to find ways to make use of it. Constant engagement with the literature around coloniality of knowledge and referring back to research objectives proved most useful as a way to delimit the analysis.

I was advised during my PhD progression board to include reflections on gender and ethnicity since one could not study Kenya and not think about these issues. There are some who might be disappointed at the absence of these topics. My position on this, is that a focus on gender and ethnicity should be guided by methodological aims rather than research location. Gender dynamics and tribalisms are topics that are pertinent in all settings; were they to appear to be absent, their absence would be remarkable enough to warrant scrutiny. Guided by the actor-centred approach it was possible that these topics would arise as strong themes in the data. They did not. Instead other forms of social indexing came through much more persistently; specifically, class and race. In addition, the fact that these topics appear to be endemic to Kenya is a reason to enquire why this is seen to be the case. The discussion has focussed primarily on the interaction between Nairobi and the conflation of modernity with Euro-America. Perhaps it is this conflation that makes Kenyan appear particularly gendered or modulated by social division.

Research on gender, race and technology have a long-standing history in STS. Research on race and digital technology is a newly emergent field. Recent works by Safiya Noble (2018) and Ruha Benjamin (2019) have illustrated how race is encoded into digital technologies, specifically algorithms. While the research of encoding racism into artefacts is underway and the start-up-venture capital arena has developed a reputation for being particularly discriminatory, the academic scholarship evidencing discrimination in selection environments is still wanting.

> The inattention to gender issues that Wajcman indicated is reflected in the comparable indifference to racial issues in analysing the creation, development, production, and distribution of technology. As result, these approaches theoretically shut down discussions about black technological experience. (Fouché, 2006, p 645)

Analyses of gender and race and sociotechnical arenas tend to also be derived from Euro-American contexts. This analysis is about how these social dynamics might play out in African settings.

Decolonisation has recently become topical and this study contributions to this area of scholarship. Presently, decolonial perspectives are having great impact in the academic realm, causing universities to go as far as rethinking their syllabi (Mbembe, 2016; Ndlovu-Gatsheni, 2018; Nişancıoğlu et al., 2018; Noxolo, 2017; Sabaratnam, 2017). I was heartened that the recent 2018 STS conference was concerned with similar matters. It prompted:

> The conference's Call for Proposals on 'Transnational Materialities' provided an important reminder of the need to be attuned to the specificities of spaces and places. In particular, the organizers provoked contributors to consider how histories, geographies, and geospatial relations shape engagement with ideologies and networked technologies, highlighting the politics of context and its significance

As the methodology section Africa as Method implies, one of the goals is to produce a path forward for inter-Africa research that uses geography as a basis for analysis similar to Chen's Asia as Method model. The information produced here can be used to compare the experiences of other arenas of development in Africa and developing countries more generally, as they try to apply what are considered universal logics and norms. This study is specific to Nairobi, and the experiences of her digital entrepreneurs. I do not aim for these findings to be representative of other African settings. Afterall, the monolithic framing of African locales is central to the critique in this thesis. The research points to the tendency to view African states as neopatrimonial, its knowledge forms as non-modern, and its poor people/technology users as lacking in agency and therefore exacerbating their marginalisation. In its current position as an ethnographic study, generalisability and representation are not an objective of the research, rather it is to generate a thorough and thick interpretation of the arena that allows us to contemplate the effects of broader social processes. Research that seeks to understand how the innovation ideal has been appropriated in other arenas and draws comparisons is a logical next step. This can be accomplished by replicating the methodology in full, or by taking up (some) of the themes that emerged from the thematic analysis and testing their relevance in other locales. This

process would transform this ethnographic study into a case study (Widdersheim, 2018).

Due to geographical power geometry, African countries do have similar historical and contemporary experiences, which means that a comparative analysis with other African cities would be especially insightful. Analysing how their diverse attributes such as language (arenas of development are primarily anglophone), the governance doctrines of their state regimes, the vibrancy of their economies, and more would deepen the insights of this study that relate to colonial modalities in global relations. A different study would include sites outside of Africa. The pervasiveness of the Silicon Valley model means that many ecosystems take the ICT4VC approach as a given. Comparisons with arenas that do not attract international media or investor interest would be very useful for considering how/whether other arenas compete for capital. Comparing proximal arenas that do not attract the same levels of investment would yield insights into the importance of hype and reputation. For instance, comparing Johannesburg and Cape Town which have different reputations as arenas of development would be particularly interesting.

Scholars who might not be interested in observing the persistence of coloniality in global relations have otherwise noted the ability of capitalistic relationality to reproduce itself, without appearing to require consent (Harvey, 1989; C. Katz, 2004; Latour, 2007; Mbembe, 2001a; Sabaratnam, 2017; Suchman, 2011; Thrift, 2005; Tsing, 2011). Some scholars approach capitalism and colonialism through analogy as

their effects are similar. This thesis shows how modern day capitalism mirrors the patterns and paths of historical colonial exploitation by multinational companies, backed by empires (Fan, 2016a). This impetus to bridge the digital divide has allowed technology companies to enjoy a climate that has been amenable to their growth and spread, backed a global political regime. While these companies do not have the political powers of the British East India company for instance, it is interesting to consider what similarities are exist between the connectivities of maritime technology and colonialism, and digital technologies and capitalism.

I would also hope for studies that emerge not only from an observation of praxis, but that employs African philosophies as basis of theoretical and explanatory analysis (Comaroff and Comaroff, 2012b, Mavhunga, 2017). Mavhunga (2017) makes a case for an examination of arenas using African philosophies and epistemologies that examine these particularities and "unleash the transformative potential of different histories and alternative conceptualizations" (Ascione and Chambers, 2016, p 301). I found it useful to contemplate and be aware of Walter Nkwi's writing on the concept of *kfaang*, which the author uses to discuss the adoption of information and communication technologies and mobility in Kom society (in Cameroon) between 1800-2008 (Nkwi, 2015). The objective reality is that I am steeped in the dominant paradigm, therefore, I cannot deploy a theoretical lens in which I am not knowledgeable. At issue in this research is frameworks for progress that demands that polities and organisations abandon situated, often traditional, knowledge and practices, for promises that cannot be guaranteed and inclusions that are often predatory. The

integration of local or so-called indigenous knowledge and philosophies into analyses of the contemporary and technoscientific, without categorisation as cultural or area studies would be a form of inclusion that is welcome.

8.7 Lessons from Silicon Savannah

A key lesson is that theorising from Africa should not be an exercise in measuring the gaps between African places and some modern ideal (Shipley, 2010). Thereby, producing an account of what is not, rather than an account of what it is. Latour argues that 'we have never been modern', I would hazard that all modes of existence that exist in this contemporary time, are all modern. EuroAmerican cultural motifs are a particular form of modernity, a product of history is that they have become dominant and taken for granted as universal. Historicization has allowed the continuities and discontinuities of coloniality to become evident. For Kenya, while colonial rule by the British is over, the nature of its insertion into the global economy means that questions of sovereignty over its definition of progress and its elected processes for getting there remain. In *Africa's Modernities and Mobilities: An Historical Ethnography of Kom Cameroon c. 1800-2008* Nkwi (2015) produces an analysis of technological change that centres Kom perspectives and generates an understanding of Kom world views through the concept of kfaang. According to Nkwi, kfaang translates as 'newness' or 'innovation' that can be both endogenous and exogenous to the society. It represents "Africans modernising their indigeneities and indigenising their modernities" (Nkwi, 2015). Innovation according to the Kom does not necessarily translate into

restructuring society, and discarding old ways, disruption or development as catch up. It is viewed as an agentive process that emphasises choice, utility, rather than disruption. It was the Kom's perspective on newness that I kept turning to when I needed to remember that alternative theories of progress can exist. Mbembe (2016) also seems to propose a middle ground— "a process that does not necessarily abandon the notion of universal knowledge for humanity, but which embraces it via a horizontal strategy of openness to dialogue among different epistemic traditions." (Mbembe, 2015, p 19). Epistemic traditions that include African, indigenous, and other ways of knowing. I am interested in utilising methodologies for developing interpretive frameworks grounded in situated ways of knowing.

The pendulum has swung towards critique of digital economies (Benkler, 2010; Srnicek, 2017; Unwin, 2017). Even mainstream outlets and development organisations that have traditionally been evangelical about technological solutionism and digital utopias are beginning to question whether the power and scope of technology conglomerates affects their goals of reducing inequality (Speciale, 2018). Given that we have moved through time from the past, to the present, informed speculation about the future is a logical way to end the dissertation. The predictions will likely not yield any surprises, given that they are simply an extrapolation of current trends, coupled with an understanding of the history of capitalism and an awareness of Kenya's place in the world, and its political economy. It seems to me that the way to determine whose visions will dominate the future is to evaluate who has power now and what the potential for change exists.

In the future, actors who have the power to manifest their narratives, to create self-fulfilling prophecies, continue to do so, unless an unexpected change occurs. I do not foresee an immediate change in global structures. Comaroff and Comaroff (2012) argue that Africa is a setting where we can witness how capitalism works when unimpeded, and also view the outcomes[26]. The analysis indicates that the Kenyan state fails to attract multinationals to Kenya's ITES-BPO centre. However, other multinational corporations have expanded their footprint in Kenya. Facebook and Google have diversified beyond their core business by becoming internet service providers, which effectively allows them to be the entire representation of the internet for some users in Africa. When the analytical perspective on power is applied to the prospect of a growing presence of these firms, the general potential outcomes are that the presence of these firms will create new avenues for actors to enact their agency or constrain them even further.

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[26] Comaroff and Comaroff use an example that is somewhat relevant to the subject matter of this research—the effect of the casualisation of labour brought about by digital technologies, which has created labour markets and practices that are similar to the informal labour market of countries in the Global South (Comaroff and Comaroff, 2012, p 125)[26].

With respect to entrepreneurs specifically, Facebook and Google are the platform infrastructures upon which other firms, like Moola, add a layer of services (Srnicek, 2017). These firms are of data and local knowledge for the MNCs. We have seen the effect of Safaricom's de facto monopoly that results from its market share and control of the M-pesa payments infrastructure. Firms that have relied upon a partnership with Safaricom have been subject to its whims. Often Safaricom reproduces the less powerful partner's services under a new name, competes and wins. Thus, no longer having to share revenues with the partner

A category of actors that will likely experience mixed benefits are the local companies that have similar services and functions of multinational companies. How these companies fare will depend on whether they are co-opted or outcompeted. For instance, Uber Kenya outcompeted local taxi businesses by offering competitive prices and then slashed their prices to compete with local taxi hailing apps. The business development manager at Pronto often expressed his hope that they would be bought-out by global company, Shopify. Given the slow rate at which they acquired customers, it appeared more likely that they would be outcompeted.

Digital MNCs keen to learn about the local environment and to apprehend their future customers are able to do so without buying local companies. Safaricom and Kencell serves as examples of digital companies that do this well, and those that do not. Safaricom provides a lesson in the importance of local knowledge and innovative business models. Its CEO shares his belief that it is the M-Pesa agent system, rather

than the technology itself that is the key innovation. Because of their capitalisation, we can expect that global companies will continue to have the upper hand, barring legislative intervention, which is unlikely. IBM's Research Lab in Nairobi required a ten-million-dollar matching investment by the Kenyan government in order to locate itself Nairobi's Catholic University of Eastern Africa. At this lab, IBM conducts research on commodifying its knowledge of the local environment and configuring future users. The IBM Global Research Lab's, Digital Nation Africa (D-NA) product offers comprehensive digital literacy materials and technologies to African governments at no cost (Interview, IBM Kenya Representative). The stated goal is to resolve "pain points" for Africa by seeking to accelerate digital awareness and learning. For IBM it has the advantage of priming digital technology users and creators to use IBM technologies in the future. By making themselves infrastructure providers and providing free products these firms cement themselves into the local sociotechnical fabric.

Local technology firms that are situationally aware engineer appropriate technologies, business models and repertoires that can have good impact and endure. As users become more technologically savvy, their ability to constitutively appropriate the technologies and the discourses also grows. Who is to say that digital technologies will not be implicated in a different modality that commodifies selectively and allows communities to eliminate inequities and asymmetric power geometries? Afterall, this is the narrative infrastructure that is developing around cryptocurrency. As with the narrative infrastructure of innovation and entrepreneurship, it remains to be seen if its

promises hold up to scrutiny. One of the key messages of science and technology studies is that the social outcomes of technology are difficult to predict. For better or worse, what is clear is that actors will always find ways to express their agency.

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