1 Duality by Design: The Global Race to Build Africa's Infrastructure

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('The new dawn')

This book starts from the idea that much can be learned about the design of new forms of organising, theoretically and empirically, by examining a phenomenon central to the global order: Africa's struggle to bridge a growing gap between supply and demand for basic infrastructure. A gap linked, amongst other factors, to the rapid growth of the continent's population, projected to reach 40 per cent of the world's population by 2100.[1] Infrastructure is a vast class of capital-intensive technologies that input into a wide range of productive processes that generate positive externalities and social surplus. Whether it is about transport (airports, railways and roads); utilities (power, water, sanitation and telecoms); or social assets (social housing, schools and hospitals), most forms of infrastructure are durable public goods, shared in use by many people and organisations. This is the fundamental attribute that makes infrastructure technology a source of broad value creation and appropriation.[2] This attribute also explains the role of infrastructure technology in enabling economic growth and social development and in equipping societies for climate change. So it is incumbent on those who provide assistance to development, and on the African policy makers themselves, to fill the gap in basic infrastructure. Failure to act, and failure to make Africa a better place to live and work, will saddle future generations with a major bottleneck to global, sustainable development. Africa's struggle is our struggle.

In this book, we argue that there is a fundamental duality in the design of the inter-organisational contexts set up to tackle this grand societal challenge of our times. Design dualities exist when organisations wish to

[1] Africa's 2017 population was around 1.3 billion, 16.6 per cent of the world's population. The UN (2017) projects it will double into a quarter of the world's population by 2050, and by 2100 it will reach 4.5 billion; together with Asia's population, projected to reach 4.8 billion by 2100, the two regions are projected to represent around 82 per cent of the world's population by 2100.

[2] Frischman (2012).

pursue two objectives that are jointly desirable, but they struggle to reconcile the two because the organisational design attributes that underlie one objective tend to be incompatible with the attributes of the other,[3] for example, whether to exploit or to explore; to integrate or to differentiate? Faced with difficulties in designing organisations in such a way as to pursue dualities, organisational architects choose to focus on one of the poles, as opposed to aiming for both; so, they end up choosing 'gains from focus' at the expense of 'gains from ambidexterity'.

The empirical studies curated for this book on global efforts to bridge Africa's gap between supply and demand for basic infrastructure reveal a duality between *building institutions* and *building technology* – two equally desirable objectives that turn out to be organisationally incompatible. Both institutions (the prescriptions created and used by humans to organise all forms of interaction[4]) and basic infrastructure (the technology needed for the functioning of a modern society) are key enablers of socio-economic development.[5] But building robust institutions is time-consuming and costly, and requires orderliness and transparency. In contrast, adaptability and opacity rule organisational design and evolution in order to enable quick development of new capital-intensive technology. Faced with difficulties in reconciling these two attributes, the organisations set up to promote development choose to focus on either pole of the duality.

To make sense of this duality *by design* we need to attend to the newly emerging global order. China is rising to become the world's biggest economy, whilst the share of the global economy of the advanced economies, hobbled by fiscal pressures and populism, shrinks. This shift has given African policy makers agency to choose between two groups of intermediaries – the development agencies that broker resource exchanges between the recipient country governments, and primary donors (taxpayers) and contractors.[6] 'Traditional' intermediaries include multilateral organisations such as the World Bank and the development agencies that are fully owned by the advanced economies; the 'emergent' intermediaries are mainly associated with the economic rise of China (Bräutigam 2009, 2011). Chinese assistance to the

[3] Lawrence and Lorsch (1967); Evans and Doz (1989); Birkinshaw and Gibson (2004); Smith and Tushman (2005); Gulati and Puranam (2009).
[4] Ostrom (1990), North (1990).
[5] To the extent that the Global Competitiveness Index framework of the World Economic Forum (2017) lists institutions and infrastructure as the first two pillars of basic requirements.
[6] Martens (2005); McDermott, Corredoira and Kruse (2009); Mair, Marti and Ventresca (2012).

development of Africa already equals that disbursed by the World Bank and dwarfs the assistance disbursed by the advanced economies. Irrespective of the intermediary, the higher-order goal is the same – socio-economic development. Yet, the priorities for action differ immensely. In the organisational contexts enabled by traditional credit, the emphasis is on building institutions, but this emphasis shifts to technology building when the Chinese credit is involved. And since the design attributes underlying the two objectives are incompatible, the leading participants choose to focus coordinated collective action on one objective or the other.

The choice of focus is rooted in the differing preferences of the intermediaries and in the self-interests of the recipients. Traditional assistance to development is conditional on two factors: First, on Western ideals of 'good' governance – transparency, accountability, inclusiveness, equity and the rule of law; and second, on the idea that development projects, the typical form whereby assistance is disbursed as this gives the intermediary leverage over inputs and activities, need to be delivered on time and within budget. But disbursing assistance under these institutional constraints is protracted because it requires mitigating many institutional voids. These voids correspond to the absence, or under-development, of the institutions of capitalism that support economic activity in advanced economies, e.g. efficient markets, strong regulation, independent judiciary, property rights and contractual enforcement mechanisms.[7] So, under this approach, organisational design choice is guided by the principles of orderliness and transparency; that is, building the institutions first, and the infrastructure second. In contrast, Chinese assistance is not tied to governance and project-management ideals, and so comes with limited conditionality.[8] The Chinese approach takes the local environment as a given and does not seek to change it.[9] Instead, the aim is to fast track new infrastructure development by exploiting those institutional voids, or artfully manoeuvring around them. With this model, the principles of adaptability and opaqueness rule choice in organisational design, and that results in the choice to build infrastructure first and build institutions second.

[7] Khanna and Palepu (1997; 2010). Of course, customary rules and traditions are also 'institutions' that play an important role in structuring human interactions; how they complement the institutions of capitalism is a debate for another place.
[8] Henderson (2008); Henderson, Appelbaum and Ho (2013).
[9] Bräutigam (2009, 2011).

By foregrounding this duality by design, we are not suggesting moral equivalence or the abandonment of principles entwined with the traditional approach. And neither are we suggesting that one approach is 'superior' to another, far from it. Indeed, we find equifinality, in that we argue both forms of organising are pursuing a similar superordinate goal – socio-economic development. Furthermore, we need to appreciate that the rise of a 'new' approach reflects the failure of the 'old' one to deliver. In fact, we still know little about how to organise for the tackling of grand challenges when there is a shortfall of institutions. What we are doing here is uncovering a duality that explains empirical regularities. We believe this duality offers a conceptual foundation for building a novel theory of organisational design with which to navigate institutional shortcomings.

But we are getting ahead of our story. We turn first to summarise the infrastructure gap facing Africa, and introduce our cognitive lens with which we propose to further our understanding of how to tackle this grand societal challenge. We then offer an overview of our empirical findings and the book's structure. Finally, we sketch the rudiments of a theory of (meta-)organising in environments with weak institutions, in light of the design duality revealed by this volume of studies on efforts to build basic infrastructure in Africa, a critical part of our global commons.

1.1 Africa's Infrastructure Gap: A Grand Challenge of Our Times

Africa is the last frontier in management research.[10] So it is not surprising, then, that the continent's struggle to bridge its infrastructure gap, whilst long a topic of interest to development economists, remains a largely untapped problem in management scholarship. Yet Africa's infrastructure gap is a useful setting in which to produce fresh evidence and insight into new forms of organising to tackle the grand societal challenges of our time – seemingly intractable problems that, in the way they intertwine technical and socio-economic elements, cannot effectively be addressed without coordinated and sustained effort from multiple actors.[11] Management literature suggests that tackling grand challenges requires unconventional approaches and novel ideas. But we still know little about how to design these actionable organisational solutions, even less so when there is a shortfall of institutions in the environment.

[10] Klingebiel and Stadler (2015); George et al. (2016).
[11] Some grand challenges are discrete, with a clear endpoint, like developing an HIV vaccine; others are broad and open-ended like building Africa's infrastructure, curing cancer or eliminating poverty; Colquitt and George (2011); Ferraro, Etzion and Gehman (2015).

The root causes of Africa's growing gap in basic infrastructure are well understood: a conflation of rapid population growth, fast urbanisation, climate change and a complicated colonial legacy. Assessments of this gap, estimated in monetary terms at $130–170bn per year, with a related financing gap of $68–108bn, are plentiful in the technocratic literature.[12] We find it useful to share some illustrative figures before introducing our core argument on tackling this grand challenge. For example:

- The International Energy Agency estimates that nearly half of Africa's population lack access to grid-connected electricity, and that the frequency of power outages experienced by industrial users costs about 2 per cent of the continent's GDP every year.[13]
- According to the UN, economic water scarcity is a widespread problem in sub-Saharan Africa, whilst physical water scarcity is problematic in northern Africa.[14]
- The proliferation of slums is a cause for global concern – 60 per cent of sub-Saharan Africa's urban population live in slums, lacking property rights and access to very basic public infrastructure and services.[15] With 90 per cent of urban growth happening in the developing world, particularly in Africa, the UN projects that by 2023 the number of slum dwellers will reach 2 billion (a quarter of the world's population). If the world fails to act, this will fuel poverty, social exclusion, radicalisation, hunger, gender inequality and mass migratory pressures; all of which threaten the global order.
- Equally worryingly, by 2100, Africa will host many of the largest megacities in the world. Metropolises such as Lagos, Kinshasa, Dar es Salaam, Khartoum and Niamey are all projected to exceed 55 million people.[16]

So it is not surprising that the UN asserts that investment in basic infrastructure is the most important requirement that must be fulfilled in order to meet its Sustainable Development Goals (SDGs). These goals include ending all forms of poverty, fighting inequalities, protecting the planet, tackling climate change and ensuring prosperity. The ninth SDG, in particular, spells out the need to build resilient, reliable and sustainable infrastructure, with a focus on affordable and equitable access for all. Importantly, a 1 per cent increase in the stock of basic infrastructure is estimated to correspond to a 1 per cent increase in GDP.[17]

With this backdrop, we turn now to examine this challenge through an organisational lens.

[12] African Development Bank (2018). [13] IEA (2016); IRENA (2014).
[14] UNEP, 2010. Africa Water Atlas. United Nations Environment Programme (UNEP)
[15] UN-Habitat (2016); UN (2018). [16] Hoorweg and Pope (2017).
[17] UN (2013); World Bank (1994); Esfahani and Ramirez (2003).

1.2 Institutional Voids, Intermediaries and Organising for Development

At the crux of the challenge of tackling Africa's infrastructure gap is the problem of navigating institutional voids. Institutional voids relate to the lack of developed prescriptions with which to organise interaction between humans and economic agents; institutions are interdependent with norms, but the two concepts are distinct. Norms are the cultural prescriptions that are part of the generally accepted moral fabric of societies. In contrast, the best way to think of institutions is in terms of the 'rules of the game' that individuals and organisations design, both formally and informally, to enable and constrain collective and individual action. Broadly, these rules encompass three dimensions. They clarify:

- who the participants are in a set of interactions, their distinctive roles and how to achieve the superordinate goals that unify the participants.
- the arrangements that monitor interactions between participants within an organisational system and with external stakeholders, as well as the arrangements that are used to assess the performance of the system in relation to the identifiable system-level goals; and
- the arrangements by which the consequences of non-compliance are established, how conflicts between participants and between participants and external stakeholders are adjudicated, and how penalties for non-compliance are enforced.

In developing countries, the under-development or absence of the institutions of capitalism, which enable and support economic activity in advanced economies, creates institutional voids.[18] Institutional voids hinder the mechanisms that allow resource exchanges, increasing the transaction costs for businesses and the state. These voids include:

- Inefficient markets for capital, skilled labour and products.
- Poor and under-developed regulation.
- Ill-defined property rights.
- Weak systems of checks and balances; the so-called non-executive institutions of accountability, capable of constraining arbitrary action by the political leadership and the public bureaucracy.
- Weak rule of law and independent judiciary, which are needed to act as impartial third-party structures in the arbitration of conflict, enforcement of legal contracts and resolution of disputes.
- Absence of competitive, free and fair elections.

[18] Khanna and Palepu (1997, 2010).

- Limited openness in the way civil society operates and information flows, due to institutional constraints imposed on the media and on freedom of information.
- Emphasis on the conferral of patronage in the way political parties are organised.

Gaps in basic infrastructure are in themselves a class of physical or 'hard' institutional void that are challenging to navigate. A lack of transport infrastructure complicates the flow of goods and people, making it harder for individuals and organisations to coordinate action, cooperate and trade; an unreliable power supply deters private investment and undermines productivity; lack of basic social infrastructure makes it harder to develop and retain talent, tackle gender inequality and poverty, and so build local capabilities. And yet, basic infrastructure voids also hold opportunities for multiple public and private actors to work together to create and appropriate value. In the short-term, new infrastructure development projects are a boost to the local economy and create lucrative opportunities for private firms, as either suppliers or development partners. Further, in the long-term, new infrastructure are common goods that can be leveraged to promote societal prosperity at large. But regrettably, corrupt actors also see in new infrastructure development projects opportunities for rent-seeking by breaking the law and pursuing informal private gains at the expenses of the common good.

The lack of infrastructure and other institutional voids remain a feature of most African states. Of course, Africa is not a homogeneous continent. Around half of African states have already achieved middle-income status, and in many others, a democratic central government has devolved power to local authorities.[19] Still, most African states are settings where deep-seated aspects of neo-patrimonial governance enable the local elites to concentrate vast amounts of political, economic and, even, juridical and military power.[20] Helping African states and private firms build infrastructure and navigate the institutional voids are the intermediaries. In the infrastructure sector, development agencies play this role by brokering the resource exchanges necessary for the local authorities to build capital-intensive public goods. This occurs to the extent that assistance to development as a source of revenue (including official aid but also export credits and loans) is roughly 10 per cent of the GDP for many emerging economies. These intermediaries fall into two categories.

The 'traditional' intermediaries provide about two thirds of development assistance; these include development agencies owned by the advanced economies, and multilateral agencies such as the World Bank.

[19] African Development Bank (2014).
[20] Chabal and Daloz (1999); Erdmann and Engel (2006).

These traditional intermediaries make assistance conditional on the recipients conforming to Western standards of 'good' governance and project management.[21] If the recipients fail to meet these conditions they cannot qualify for assistance, or the development agencies apply pressure, i.e. by threatening to terminate assistance, actually terminating it or reducing it. In other words, traditional agencies act as open-system intermediaries that seek to both create benefits for parties beyond a restricted set of system participants, and to improve the general institutional environment.[22]

The other third of assistance to development comes from the 'emerging' intermediaries – the countries that lie outside the OECD Development Assistance Committee. China bears by far the greatest weight in this group. Assessing assistance disbursed by China (mostly in the form of buyer's credits and concessional loans) – as opposed to pledges of assistance yet to be committed – is difficult, as the Chinese authorities are very secretive. However, reliable figures suggest that assistance from China in Africa will soon exceed assistance disbursed by the World Bank; Chinese assistance also dwarfs that from Western agencies.[23] Assistance provided by intermediaries such as the China Eximbank and the China Development Bank comes with limited conditionality.[24] This is not to say, though, that the Chinese intermediaries act as closed-system intermediaries, only seeking benefits for the participants in the organisational contexts enabled by Chinese credit. This is not the case. Instead, Chinese assistance seeks to replicate the successful model of Japanese assistance used to develop China decades earlier, and so the Chinese loans tend to be tied only to purchasing and importing from China as much technology and as many services as possible.[25]

Much has been written in the economic development literature of the last decade about how, with the economic rise of China, African governments have gained agency to choose between two competing forms of intermediation.[26] Before we develop our argument from an organisational

[21] Good governance is one of a broader set of prescriptions on how to engineer development that became known as the 'Washington Consensus' in the early 1980s. Other prescriptions include a neo-liberal agenda of economic reform, promoting less government, the benefits of markets and the importance of avoiding excessive inflation, excessive budget deficits and overvalued exchange rates. The Washington Consensus has since lost its allure, but assistance to development by traditional donors remains conditional on good governance; UN (1995); Burnside and Dollar (2000); Hermes and Lensink (2001); Rodrick (2006).
[22] Mair and Marti (2009); Dutt et al. (2016).
[23] From 2000 to 2015, US$63 billion were disbursed by the Export-Import Bank of China (China Eximbank) against US$1.7 billion by the USA Eximbank; in 2015, the World Bank provided US$14.3 billion of loans to Africa, a figure similar to the finance committed by China; Eom et al. (2017).
[24] Henderson (2008); Henderson, Appelbaum and Ho (2013).
[25] Bräutigam (2009, 2011).
[26] Hernandez (2017); van Dijk (2009); Woods (2008); Tan-Mullins, Mohan and Power (2010).

perspective, we summarise here the gist of this unresolved debate: On one side are scholars who see Chinese assistance as allowing profligate African states to build up unsustainable levels of debt, retain weak financial, economic and political governance, and occasionally infringe human and civil rights. For harsher critics, Chinese assistance is nothing more than a 'narrow elite business dialogue' and 'rogue aid', serving an opaque clique of interests dominated by informal and personal relationships.[27] China's true motives for cooperation with Africa are also questioned, particularly around the use of natural resources as collateral in return for credit, the so-called 'resource for infrastructure deals'.

Yet other scholars argue that China-bashing is hypocritical and only serves to bolster Western interests. They claim that Western assistance to development is dogmatic and inflexible, that good governance requirements increase transaction costs too greatly and that Western assistance's impact on socio-economic development has been negligible. And so, in their view, China provides much-needed investment in critical infrastructure; brings technical and commercial know-how and widens market access; and quickly completes the new infrastructure necessary for development without any tiresome strings attached. Disagreements notwithstanding, there is agreement that the availability of alternative sources of credit has strengthened the bargaining power of African states in their negotiations for assistance to development. This gained agency raises the question of whether a 'race to the bottom' will ensue in terms of the conditions offered to borrowers who are of strategic importance to both groups of intermediaries.[28]

1.3 Using Organisational Design to Navigate Institutional Voids

The debate amongst development scholars on the new global order is instructive, but leaves out issues that are important from an organisational design perspective. Broadly speaking, intermediaries enable public agencies and private firms to come together in actor-networks unified by an identifiable system-level goal. But environments with poor institutions are a boundary condition that lies outside most extant organisational design studies. Hence, our understanding remains incipient on the choices that organisational designers need to make to navigate institutional voids. To further our understanding of this issue, we first need to amass evidence in the tradition of inductive research. Armed with data assembled through

[27] Naim (2007). [28] Mohan and Lampert (2013); McLean and Schneider (2014).

painstaking fieldwork, we can cycle between more data and theory to identify relevant constructs, propose relationships that link those constructs and develop new underlying theoretical arguments on how those logical relationships illuminate general phenomena.[29] So, empirical studies about Africa's struggle to build basic infrastructure are useful to help us develop the rudiments of a theory on designing organisations to navigate institutional voids.

This volume of empirical studies reveals efforts to mobilise a diversity of organisational structures in order to fill Africa's infrastructure gap, such as: markets, to address the lack of power-generation capacity; authority hierarchies, to develop new railway lines; alliances, to build new hospitals; self-organising structures, to upgrade informal settlements; and other hybrid forms of organising. This diversity is not surprising. Indeed, it mirrors the diversity of the designed structures by which advanced economies pursue similar goals. Given that the focal problems have differing attributes, it is predictable to find differing structures designed to help economise on transaction costs and leverage local capabilities.[30] Furthermore, African states are not alike from an institutional perspective, another factor contributing to organisational diversity. Changing institutions is also costly and time-consuming and those transaction costs are a source of organisational diversity.[31] Grand-challenge task environments also require both a high degree of differentiation to attend to the different facets of the tasks and a high degree of integration amongst the participants in order to achieve desirable outcomes – two attributes that also contribute to organisational heterogeneity.[32]

Our goal here, then, is not to explain this diversity of forms of organizing to tackle Africa's infrastructure gap. Rather, we were driven by the question as to whether we could identify any general underlying patterns in the way these differing structures sought to tackle this grand challenge. Could we, then, dig below this diversity to identify patterns in the way these structures were designed to adapt to their environment? As we probed deeper into the evidence amassed for this book, a pattern did emerge. All the studies illuminate organisational contexts set up to ultimately promote socio-economic development by way of tackling basic infrastructure. Yet the evidence leveraged to explain the extent to which these organisations succeeded or failed to achieve their objectives suggest the existence of two fundamentally different approaches to navigating institutional voids. One group of studies focuses the analysis of

[29] Eisenhardt, Graebner and Sonenshein (2016).
[30] Williamson (1985); Ostrom (1990). [31] Libecap (1989).
[32] Knudsen and Srikanth (2014).