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Spatial challenges in contemporary African New Towns and potentials for alternative planning strategies

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ABSTRACT
New Towns in development across Africa are overwhelmingly designed according to twentieth-century planning models ranging from functionalist Chinese grids to American gated communities. Contemporary African New Towns based on these models are often unable to adapt to stimuli and, as a result, exacerbate both spatial and ecological challenges. The objective of this paper is to argue that African New Towns require a substantial shift from current practice and that planners must imagine new, hybrid planning strategies. This paper takes an exploratory approach and identifies the spatial challenges specific to contemporary African New Towns. Building on the argument that planning benefits from linkages between critical social theory and environmental science, this paper asserts that an adaptive urban planning approach that effectively engages citizens can be a more sustainable alternative to current practice. The paper concludes with implications for future research on the translation of challenges into potentials for African New Towns.

1. Introduction

Africa is currently the fastest urbanizing continent in the world (World Bank 2016). It is the only continent projected to maintain this degree of urban growth throughout the next century: by 2100, one quarter of the world's population may be African urbanites (UN 2014). But this urbanization is not happening in the same ways it has happened in other places. Most of this urban growth will be in mid-sized cities, and most of it will be informal and unregulated (UN 2014; Pieterse 2015). Due to various factors, the urban poor are often forced to build homes on land that is 'low cost and high risk', effectively placing those with the least financial, physical or political protection in the most vulnerable areas (Cain 2014). Projections for increasingly intense natural disasters and extreme weather patterns contribute to the urgency with which these issues must be addressed (Salinger, Siva-kumar, and Motha 2005). Contemporary urban development in Africa is characterized, broadly speaking, by two forms: the unregulated urban growth associated with informal communities and the highly-planned execution of New Town or gated community development. Both current forms of production of space – the 'informal' settlement and the New Town – are unsustainable (World Bank 2016; Hallegatte et al. 2017; Murray 2017). Both face multi-scale, systemic challenges that impede their ability to offer inclusive, ecologically sustainably urban habitats. As the editors of this special issue point out in their introduction, this article focuses on contemporary New Towns in African countries and offers an overview and critical assessment these new developments. It also

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proposes an analytical framework for studying their emerging properties, and concludes with recommendations for the development of more adaptive planning and design principles.

Over the last three decades, there has been an increase in the construction of New Towns across the African continent (Watson 2014). We define 'New Towns' as planned urban developments for more than 30,000 residents with mixed programmes on greenfield sites, that are developed as a single entity with some degree of political autonomy. Other authors have addressed these developments alternatively as 'new cities' and 'satellite cities', but we intend this definition to be slightly more precise, with clear boundaries, and in line with the historical trajectory of New Town development around the world. The majority of these New Towns are suburban enclaves catering to higher income groups (Watson 2014; Keeton and Provoost 2019). They offer amenities ranging in luxury from reliable water and electricity access to private 24 h security and horse racing tracks (Keeton and Provoost 2019). The vast majority of these New Towns are not designed to transform in response to either system shocks or incremental socio-ecological changes. Rather, they are planned as finite products, with little attention to either existing environmental conditions or future threats.

There is considerable literature that reflects on contemporary African New Towns as unique urban forms (Cain 2014; Watson 2014; Herbert and Murray 2015; Abubakar and Doan 2017; van Noorloos and Kloosterboer 2018). For example, Vanessa Watson (2014) was one of the first authors to identify the increase in privately-planned New Towns in Africa, and has explored how rhetoric around the 'rising' African middle class attracted international developers and initiated the process of speculative urbanism in Africa in the form of New Towns. Cain (2014) discusses these processes in the context of Angola's recent New Town projects (*novas centralidades*). Murray (2015, 2017) distinguishes what he calls 'instant cities' from conventional city-building. van Noorloos and Leung (2017) have deemed these New Towns 'unsuitable' solutions to Africa's urban problems. Abubakar and Doan (2017) conclude that African New Towns should do more to address rapid urbanization and informality, among other issues.

Taken collectively, this body of work establishes a consensus among academics that the New Towns in question do not effectively address the compelling social, ecological and financial challenges that characterize many African urban environments. It is generally agreed that as private developments they represent investment opportunities, and consideration of equitable housing distribution or inclusive development policies are largely lacking. Much of this work relies fully on internet sources and academic literature, and this research therefore makes a departure by employing empirical evidence from six field sites, two of which are discussed in section 4. As many of the New Towns addressed by this research are in countries with limited reliable urban data, empirical evidence allows us to aggregate information from multiple sources and verify the results of the database with specific examples. This combination gives a more detailed picture of current New Town planning trends and patterns across the continent.

This research also moves the discourse on African New Towns forward by identifying shared spatial challenges as well as proposing an alternative planning approach based on adaptive and inclusive planning. The goal of adaptive planning is to allow urban environments to change with external or internal stimuli, thus adapting to changing conditions over time. Adaptive planning can therefore be understood as planning that that embraces social and ecological specificities and acknowledges the diversity of different contexts. Inclusive planning aspires to address the needs of all stakeholders, including traditionally marginalized groups. It also promotes tolerance through the planning process and in design.

The objective of this paper is to identify spatial challenges specific to the contemporary African New Town typology and acquire new insight into potential areas of improvement for urban planning in the African context. With the goal of moving towards an alternative planning approach informed by adaptive and inclusive planning values, this research highlights the need for continued investigation to translate the spatial challenges identified here into a coherent approach that acknowledges and leverages existing specificities of individual geographic, historical, and social contexts. The dual objective is addressed by first reflecting on the data collected over a period of two years in

collaboration with the International New Town Institute. This reflection concludes that the evidence suggests a need for more coherent, alternative approaches, and indicates one potential way forward: more adaptive planning. Empirical evidence and theory regarding the spatial challenges specific to the African New Town as an urban form serve as the basis for this study. This paper examines two urban planning models as translated to New Towns in the African context: (1) the American gated community model, and (2) the Chinese grid city model. This is done in order to illustrate the idiosyncrasies of individual cases and convey the universality of the spatial challenges. In particular, the focus is on contemporary (post-1990) African New Towns and the spatial challenges specific to this type of urban development, while acknowledging the inherent specificities of individual cities. Because of the relative newness of this topic and the limitations of data from many African countries, the research presented here aims to more precisely define the spatial problems associated with contemporary African New Towns. The presumption is that certain spatial challenges of African New Towns are caused by the application of common planning approaches without adapting to the site-specific spatial, social and ecological circumstances. Therefore the paper argues that the planning and design of African New Towns requires a substantial shift from current practice; that planners must apply more adaptive planning strategies and reconsider the highly regulated nature of New Towns that disenfranchise low-income groups. The concept of 'invited spaces' is explored in section 6.1 as an alternative to the top-down approach preferred by many developers.

The paper begins with unfolding the research methodology, addressing the research strategies employed to analyse the theoretical body of knowledge and the collection and interpretation of empirical data. Next the development of the African New Town planning practice is shortly summarized. Two examples are used to illustrate the most prevalent spatial challenges resulting from contemporary planning practice in Africa. These representative cases are employed in order to make a methodological contribution and reflect on the relationship between planning practice and experiences 'on the ground', embedded in complex historical trajectories. This is followed by an overview and interpretation of the data collected on 150 New Towns planned since 1960. This database was developed jointly with the International New Town Institute over the period 2016–2018 and provides a framework for analysis of quantitative variables. While comparing the analysis results with empirical material and theory, the spatial challenges in African New Towns are identified. A discussion of the findings and their implications follows. The paper concludes with recommendations towards the development of more adaptive planning strategies and their principles.

2. Methodology

The research methodology consists of three constituent elements to identify spatial challenges specific to the contemporary African New Town typology: (1) overview and analysis of quantifiable data related to New Towns in Africa since 1960, (2) review of associated planning traditions, (3) collection and analysis of empirical data.

2.1. Overview of New Towns

Between 2016–2018, a database of 150 New Towns in Africa planned since 1960 was assembled through a collaboration between the lead author and the International New Town Institute using academic literature including books and journals, local media sources such as newspapers and magazines, planning documents and online sources including project websites, designers' websites and developers' websites. The database includes information for each example such as: geographic location, year of announcement, construction dates, planning offices involved, project initiators, target and current populations, size and density, current status, relative balance of public and private investment, target income groups, planning model, and stated goals for each New Town. We acknowledge the limited availability of data for some examples, however, the database results are useful in identifying broader trends over time, including the number of New Towns announced per year,

the shift from primarily public investment to primarily private investment over time, the shift from low- and middle-income target groups to middle- and high-income groups, and to establish a general picture of where and when New Towns have been constructed. The database is thus used to gain insight into both the historical trajectory and current state of New Town planning in Africa. The use of illustrative examples in section 4.1 expands on the results of the database and combining these methods allows us to test and verify patterns identified from the database (Figure 1).

However, the results of this analysis should be viewed as indications of trends rather than absolute values: many local architects and planners have intimated that for each New Town that receives media attention, there are ten more being developed quietly in order to avoid the legal complications that can accompany largescale development. These projects are not considered here.

2.2. Review of New Town planning in Africa

From analysis of the database described in the previous section, it becomes clear that many contemporary New Towns in Africa have been developed with strong influences from existing planning models including the American gated community model, the South African township model, the Chinese grid model and the French *villes nouvelles* model. Review of state of the art literature

Figure 1. The dispersal of New Towns across North, East, West, and Southern Africa indicates that this phenomenon is widespread, and proliferates in proximity to existing urban centres and along coastlines. © International New Town Institute 2017, used with permission.

confirms this result (Watson 2014; Herbert and Murray 2015; Abubakar and Doan 2017; Smith 2017; van Noorloos and Leung 2017). Relevant literature was selected using key terms in Scopus and Google Scholar. These terms were pre-chosen for eligibility and included 'New Town(s)', 'African urbanisation', 'private development', 'satellite cities', 'planned cities', and 'African urban development', among others. Sources included academic journals, conference papers, and book chapters.

2.3. Field work

Due to the limitations of remotely-sourced data on this topic, fieldwork was conducted between 2015–2018 in eight African New Towns: Tatu City, Kenya; Konza City, Kenya; Ville Verte Mohammed IV, Morocco; Sheikh Zayed City, Egypt; 10th of Ramadan, Egypt; Appolonia, Ghana; Tema, Ghana, and Kilamba, Angola. These examples were chosen because they represent the great diversity of compositions of the variables identified in the database: geographic location, year of announcement, project initiators, target and current populations, size and density, etc. The selected cases are therefore representative of the wide range of urban areas that meet the pre-established criteria for 'African New Towns' (i.e. planned urban developments for more than 30,000 residents with mixed programmes on greenfield sites, that are developed as a single entity with some degree of political autonomy).

Field work methods included semi-structured interviews with planners, local and national politicians, residents, academics, and developers, as well as expert focus-groups, and observation in the field setting, with a focus on spatial planning and design.

The mixed methods used in this research are undertaken from a practical approach: because of the limitations of remotely-sourced data from many African countries, and recent (and rapidly changing) nature of this phenomenon, empirical evidence is used to cross reference and validate the results. This mixed approach allows for new insights by indicating continent-wide trends at the macro-level and identifying specific examples that illustrate the conclusions.

3. African New Town planning from 1898–2017

New Towns are unique urban developments and heirs to specific and complex planning histories. This section provides background on that development within the African continent and relates this historical perspective to contemporary development.

3.1. History of New Town planning in Africa

Although largely destroyed by war and plunder, ancient Africa had cities of grand scale that were extensively planned. El-Lahun (also known as Kahun or Ro-hent), Egypt is perhaps the oldest master planned urban settlement currently known in Africa; archaeologists have dated its walls to 1897 BC (Mazzone 2017). Gridded street patterns suggest authoritative planning rather than spontaneous generation, and precolonial Senegalese cities including Diakhao (sixteenth-century), Kahone (mid-sixteenth century), and Maka, (eighteenth-century), are clearly organized along orthogonal grids (Ross 2015). Further south, medieval planned African cities such as Songo Mnara, Tanzania, a fifteenth-century Swahili stonetown, had highly developed social welfare systems, craftsmanship, and political organizations (Patel 2014). Eleventh century Edo (Benin City), Nigeria, for example, is thought to have been designed based on fractals, and included underground drainage as well as centralized and sophisticated bureaucracy. Archaeologists continue to discover remnants of African cities designed with geometric precision and programmatic spatial divisions that suggest coordinated planning, such as Harlaa, Ethiopia, a ninth-century cosmopolitan trading city identified in 2017 (Gaffey 2017). Archaeological findings that indicate rapid construction and massive investments may also suggest coordinated planning efforts, but in many cases there is not sufficient historical record to determine the full degree of planning.

As elsewhere in the world, the vast majority of African cities were not planned, but found their genesis in small communities that expanded progressively and shifted from temporary materiality to more permanent materiality as resources allowed (Anderson and Rathbone 2000). Coquery-Vidrovitch (2005) refers to the hybridity of African cities, pointing to the superimposition of medieval trade cities, precolonial Islamic spatial influences and both destructive and constructive colonial forces. Coquery-Vidrovitch (2005, 207) limits her scope to the period between the origins of urban life and the heyday of colonization, which she identifies as the nineteenth century's 'urban revolution'.[1]

The colonial period (generally understood as the period between the Berlin Conference of 1884 and 1960; the 'Year of Africa'), largely inverted the concept of urban life in Africa, and has thus rightly been the subject of considerable research (Myers 2003; Njoh 2009; Avermaete, Karakayali, and Von Osten 2010). Instead of the centuries-old trading cities that once dominated inland Africa, colonial occupiers replaced (and often destroyed) these centres of commerce with coastal port cities that facilitated the export of natural resources (Coquery-Vidrovitch 2005, 25).

Colonial urban models varied greatly among the respective colonial occupiers. Each colonial government brought in its own design theories, planners trained in specific academic traditions and underlying goals with specific spatial implications. Despite the resulting diversity of form, all colonial governments that engaged in urban planning used it as tool to enforce racial segregationist policies (Njoh 2009). This common motive was met with varying responses, however, as Silva (2015, 3) points out, there were

> highly complex two way exchanges in numerous aspects of the urban planning process in Africa. Colonial urban planning apparatus, planning laws, planning procedures and outcomes were far from being homogenous over the years and among colonies, as different have been the relationships with the respective European metropolises, in part due to the (re)actions of the colonized people.

As colonial planning in Africa was gaining ground, Ebenezer Howard's treatise *To-Morrow: A Peaceful Path to Real Reform* (1898) was proving to be profoundly influential on contemporary European town planners. Using a diagram of three magnets, Howard defines Garden Cities as the great compromise between the 'Foul Air', 'Slums and Gin Palaces' of existing cities and the 'Land Lying Idle' of the countryside (Howard 1898, 8). The Garden City model was subsequently reinterpreted around the world in master-planned New Towns that linked spatial design to social motives (Galantay 1975).

Between 1898 and 1960, European colonial occupiers introduced New Town planning ideas influenced by Howard's Garden City model in British, French and Portuguese colonies, among others. S.D. Adshead's plan for Lusaka, Zimbabwe, from 1931 and A.J. Thompson's 1920s plan for Pinelands, South Africa are often used as examples of direct application of the Howard's ideas (Myers 2003; Bigon 2013). Other European colonizing powers employed similar design principles (radial or grid compositions, low density residential areas, monumental public buildings and functional zoning), but did not call their projects Garden Cities. Every colonizing power planned for racially exclusive spaces, dividing each city into two: an area for colonial residents and an area for indigenous populations (Silva 2015). Often, these spaces were further separated by a greenbelt *cordon sanitaire* that was intended to act as a buffer zone between the two urban areas. The areas for indigenous residents invariably offered poorer infrastructure and insufficient housing provisions (Silva 2015).

During early independence from the 1960s until the 1980s, many African countries built new capitals and other New Towns as spatial assertions of nationalism and identity. Dodoma, Tanzania, for example, was largely based on the African socialism ideology of President Julius Nyerere, while Abuja, Nigeria was envisioned as a democratic capital which could help move Nigeria towards a national consciousness. For this reason, it was located in the geographic centre of the country, a choice based on the area's perceived ethnic and religious neutrality. The location for Gaborone, Botswana was chosen for its environmental advantages and lack of tribal affiliation. Most of the New Towns built during this period were state-led and embedded in prevailing political movements; unity, nationalism, and identity were central tenets of their design and development.

Seen as a group, the post-colonial New Towns that came about in the second half of the twentieth century share other similarities. Abubakar and Doan (2017), for example, have identified a number

of challenges to the implementation of these New Town projects, including their expense, the unpredictability of population growth, inequity and segregation, squatter settlements, disruption of the informal sector, lack of public involvement, and a heavy emphasis on physical development rather than social or cultural aspects. These challenges to implementation are also relevant for contemporary New Towns, and can be understood as conditions that should be studied before planning begins. Since the 1990s, however (as explored in the following section), there has been a shift towards private New Town development, moving even further away from the socio-political components that characterized earlier examples (Keeton and Provoost 2019).

3.2. Contemporary New Town planning

With the exception of national housing projects in countries such as Ethiopia, Egypt and Morocco, most contemporary African New Towns are master planned cities developed by private (often international) companies (Watson 2014; Keeton and Provoost 2019). The developers in question target the so-called African middle class, offering an urban experience that is 'family-oriented', highly planned, 'safe' and 'clean'.[2] The current situation presents a challenge for developers: how to accommodate real estate market demand while still ensuring (socially, environmentally, economically) sustainable urban centres? Broadly speaking, this perceived conflict of interests is met by ignoring long-term implications and streamlining planning processes to produce short term profits. Their involvement and responsibility for the project often ends as soon as construction is completed (Watson 2014; van Noorloos and Leung 2017). This leaves completed New Towns vulnerable to poor maintenance, ineffective urban management and devaluation over time.

    Contemporary New Towns have been characterized somewhat contrarily as both 'urban fantasies' (Watson 2014), and 'instant cities' (Herbert and Murray 2015). The private New Towns developed mostly for middle class target buyers are no longer fantasies. On the ground in places like Tatu City, Kenya; Ville Verte Mohammed IV, Morocco; Sheikh Zayed City, Egypt; 6th of October, Egypt, New Cairo, Egypt (and various other New Towns outside of Cairo), Kilamba, Angola and other Angolan *novas centralidades*, collectively, hundreds of thousands of new residents reside in these newly-built cities.

    The New Towns offer varying degrees of public services and amenities, and they range in function from urban-scale bedroom communities to fully autonomous cities. Yet despite these differences, they face similar spatial challenges, which are elaborated in the following section. One issue that may exacerbate these challenges is the fact that, despite a heritage of comprehensive urban planning throughout Africa, many contemporary New Towns continue to be based on urban models introduced elsewhere in the world during the twentieth century (Keeton and Provoost 2019). Silva (2015, xxi) warns: 'African urban planning will have to address and adapt to the needs of the citizens living in African cities and to be more cautious about imported urban models.' This paper examines two of these models as translated to New Towns in the African context: (1) the American gated community model, characterized by single-family plots, lush greenery, and semi-private spaces and (2) the Chinese grid city model, characterized by strict functional zoning, high-rise apartment blocks, orthogonal street structure and rational design.

3.2.1. American suburbia and gated communities

The American suburban model has been deployed across the African continent from Ghana to Kenya and South Africa to Egypt. Since the 1950s, private developers in the United States have built New Towns (often called 'planned communities') as a way to provide housing that was larger and of a higher quality than what was available for comparable prices in urban centres (Mumford 1959; Burby and Weiss 1976; Bloom 2001). Contemporary American New Towns have their roots in ideology-driven examples from the 1960s and 1970s like Reston, Virginia; Columbia, Maryland and Irvine, California (Bloom 2001). They have evolved, however, as highly specialized developments increasingly catering to specific tastes and devoid of political energy (Pinder 2005, 249; INTERBORO 2016). One of the major critiques of this urban model is its low density and limited demographic makeup (Burby and Weiss 1976; Bloom 2001).

3.2.2. Chinese grid

Although the grid has been used as a planning tool in China for millennia, contemporary Chinese New Town construction follows a very functionalist approach that is driven primarily by quantifiable data and projections. This typology has become a ubiquitous model developed and arrayed across China's hinterlands as an efficient tool for development following the political prioritization of urban development beginning in the 1980s. Widely-spaced high-rise apartment blocks characterize this type of development, with large open spaces and monofunctional blocks. Duanfang Lu traces influences from both CIAM and Soviet planning principles in this design approach (Lu 2006, 94). Both models advocate for clear divisions among urban functions, rational organization and heavy road infrastructure (Lu 2006, 94). While the efficient deployment of the Chinese grid plan has arguably been instrumental in China's twenty-first century leap forward, its hyper-functional design may fail to accommodate local social, cultural, or environmental specificities (Keeton 2011).

Both of these models developed over the twentieth century as urban solutions to the same confluence of events that now face many African countries: increased wealth and rapid urbanization. Their applicability in this new context, however, should be questioned (Watson 2014; Murray 2017; van Noorloos and Leung 2017; Provoost and Keeton, forthcoming). For example, the low densities of American gated communities are ill-suited to the rapid influx of new urban residents in many African countries. The expenses associated with single-family housing are often far beyond the capacity of the average citizen, and the spatial segregation exacerbated by gates and guards has proven to increase crime rather than decrease it (Addington and Rennison 2013). The Chinese grid model is unfamiliar in the African context, and on-site interviews with residents indicated social discord caused by spatial organizations specific to this model (communal circulation spaces, large public spaces with no clear programme, limited commercial facilities). The influence of these planning models on the spatial challenges of two specific contemporary African New Town examples is further elaborated in the following section (Figure 2).

4. Analysis: identifying spatial challenges in African New Towns

Analysis of the 150 New Towns in the database reveal certain patterns regarding spatial organization and its influence on spatial challenges. As the map in section 2.1 shows, New Town development in Africa has been located mainly around existing capital cities and often in coastal areas. Ecological challenges related to low-lying coastal locations such as flooding often remain unaddressed by urban plans, as do the potential social impacts of New Towns perceived as elite satellite cities. The urgency of such challenges varies widely among New Towns, which is why illustrative examples can be a useful way to better understand the specificities of complex spatial challenges.

While the results of the database provide a starting point for understanding the historical progression and current state of New Town planning in Africa, illustrative examples can give us a more detailed understanding of the complex relationship between urban model and context, and the spatial challenges that may arise from this alignment.

Specific spatial challenges can be identified in New Town examples such as Kilamba, Angola, a New Town designed as a Chinese grid city, and Sheikh Zayed City, Egypt, which exhibits clear influences from the American gated community model. Both New Towns have failed to attract their original low-income target groups, and yet have become popular with middle- and high-income groups. Kilamba is now 97% occupied and Phase II is under construction (Interview Baowen 2016). Sheikh Zayed City is known locally as one of the most expensive and luxurious New Towns around Cairo, and is therefore seen as desirable, according to locals. Many houses stand empty, but have been bought as investments either by speculative developers or as future homes for children / retirement.

Among the examples taken in this study, Kilamba is one of the most blatant examples of absolute disregard for the social and geographic context, although – notably – the lack of contextual reflection is not offered as a critique by most residents (Interview Marques 2016). Kilamba is one of the only

Figure 2. Kilamba, Angola is organized along a functional grid with hierarchical streets. Apartment buildings in Phase 1 offer three different housing typologies ranging from 110 m^2 to 150 m^2. Image © Rachel Keeton 2016.

areas in Angola with reliable water, electricity, and sewerage provision (Interview Flor 2016). Delivery of those basic urban services makes it one of the most popular places to live in the entire country, despite the constant shortage of funds plaguing the urban management team (Interview Marques 2016). The heavy infrastructure and strictly-enforced regulations, however, do not allow for any informality within the New Town (Baowen 2016). As a result, Kilamba is flanked by an informal community along its eastern periphery. Interdependency between the two communities takes the form of service jobs within the New Town for residents of the informal community, and the provision of affordable shops, garages, and markets within the informal community.

A New Town from 1995, Sheikh Zayed City, Egypt, employs the American suburban model to organize luxury gated compounds for 53% of the residents while low-income housing accounts for 15% (Metwally and Abdalla 2014). Residents of gated compounds have access to internal shops, clinics and other amenities, as well as the upscale 'plazas' (outdoor shopping malls), accessible only by car. Low-income housing residents must rely on limited public transport options to reach more affordable options in nearby 6th of October or downtown Cairo, 38 km away. The gaping divide between these two groups of residents was most recently illustrated by demonstrations outside of the New Urban Communities Authority in Sheikh Zayed in October 2016. Abdel Fattah, a protesting resident, was quoted as saying:

> Our demands are quite normal; we wish to live in an integrated city with full services. Most of us are waiting for services such as shops, pharmacies, and schools to serve the population who've just moved to this rather remote area. (Al-Aees 2016) (Figure 3)

For both Sheikh Zayed and Kilamba, the rigidity of their urban forms as well as strict building regulations limit the New Towns' flexibility in response to changing needs. Neither New Town allows for architectural representations of the informal economy such as kiosks, appropriative uses of public space, commercial uses of residential space, or privately-managed transport options (such as minibuses or *tuktuks*). Instead, both New Towns adamantly turn their backs on their physical, social and cultural contexts, forcing informal processes to their unregulated edges. According to the World Bank,

Figure 3. Sheikh Zayed City, Egypt offers limited public space, but numerous outdoor 'plazas' with commercial spaces, cafes, and entertainment options. Access to the plazas is granted by an armed guard at a single entrance point with the authority to turn away people seeking entry based on their appearance. Image © Rachel Keeton 2016.

> Land use regulations, zoning, and building regulations are some of the most valuable tools for governments to guide development and promote liveability. Yet certain interventions in urban land markets can negatively affect affordability and access to serviced land if they are not benchmarked against what the local population can afford to pay. Evidence from around the world indicates that inappropriate minimum standards actually increase informal development, even on formally titled land. (World Bank 2016, 119)

This process is occurring in both Sheikh Zayed and Kilamba, as well as other contemporary African New Towns where the majority of local residents are priced out of ownership.

5. Results: spatial challenges of African New Towns

Based on analysis of the two examples above, empirical evidence from four other examples, and the results of the database on African New Towns since 1960, a number of spatial challenges that are endemic to African New Towns can be identified. Not every challenge applies to every example, but they are all issues that arise repeatedly in the dataset. These challenges are further refined below as socio-spatial challenges related to the residents of New Towns and adjacent communities, and enviro-spatial challenges that stem from insufficient incorporation of the underlying landscape. They are summarized in the following list:

5.1. Socio-spatial challenges

5.1.1. Lack of efficient and accessible public transport systems
As exhibited by both Kilamba and Sheikh Zayed City, many New Towns are designed for car-based transit and fail to incorporate public transport options sufficiently. This has a stronger impact on low-income communities who may not be able to afford car ownership.

5.1.2. Lack of (high quality) public space
Kilamba has large public spaces, but with the exception of basketball courts, these are largely without a clear programme and poorly managed. This has the effect of creating public spaces that are

underused and generally empty. Sheikh Zayed City has very little public space, but offers middle- and high-income groups access to guarded *plazas* (privately-owned outdoor malls).

5.1.3. Limited housing stock diversity
Both examples also lack housing stock diversity: Kilamba offers only three different apartment typologies and Sheikh Zayed housing stock is differentiated between standard low-rise apartment blocks and luxury apartments and villas within the gated compounds.

5.1.4. Spatial segregation at the urban scale
These two examples also reveal spatial segregation at two different scales: Sheikh Zayed City shows a clear division within the New Town between gated compounds and so-called 'social housing' blocks, while Kilamba's official borders divide the New Town from its adjacent informal community.

5.1.5. Insufficient employment opportunities
The insufficient employment opportunities within both New Towns is informed by a lack of commercial facilities and leads to commuting between the New Towns and the closest large cities (Cairo and Luanda).

5.1.6. Displacement of communities already living on sites marked for New Town development
No existing communities were reportedly displaced by the development of Kilamba or Sheikh Zayed, although both Human Rights Watch and Amnesty International have publicized forced evictions related to largescale urban development in both Angola and Egypt (Amnesty International 2011; Human Rights Watch 2011, 2013).

5.1.7. Housing prices do not reflect the economic realities of surrounding contexts
When housing prices in Kilamba proved utterly unattainable, they were drastically reduced from $125,000 (for the smallest apartment model, T3) to $70,000. This reduction turned Kilamba into one of the fastest-selling developments in the country, but the apartments remain out of reach for the majority of Angolans. According to the World Bank, the GDP per capita for Angola in 2016 was USD 3,308,70 (World Bank 2018). In Sheikh Zayed, housing inside gated compounds can range from $560,000 for a 550 m^2 villa to $125,000 for a 165 m^2 apartment (Property Finder 2017). The GDP per capita for Egypt in 2016 was USD 3,477,90 (World Bank 2018).

5.1.8. 'Final product' approach produces New Towns incapable of adaptation
Both New Towns were envisioned as complete projects, rather than a long process without culmination. This design approach imagines a specific future based on demographic projections and relies on quantifiable data sets rather than the evolving experiences of residents.

5.2. Enviro-spatial challenges

5.2.1. Climate change threats are not addressed
Sheikh Zayed City is situated in the desert and much of its water supply is piped from the Nile River. The government has recently increased the price of water to help control demand, but when there are shortages water is brought to the New Town in tanks. The scarcity of this resource is not sufficiently addressed. Near Kilamba, Angola has faced ongoing droughts and increasingly frequent floods. Kilamba is not designed to address either situation.

5.2.2. Insufficient waste management
Sheikh Zayed still has massive open spaces that have not been developed. These desert areas quickly become dumping grounds for trash. Urban managers cannot keep pace with the production of waste.

The same is true for Kilamba, where trash piles up beside overflowing waste bins and remains uncollected by local authorities. Recycling options could be improved in both New Towns.

5.2.3. Master plans are based on car transit
Both Kilamba and Sheikh Zayed are designed for cars. Neither New Town has effective public transport, cycling, walking or other slow traffic routing.

5.2.4. Existing natural areas and green spaces are not protected
There are many indigenous plants in Sheikh Zayed City, but golf courses and landscaping use extensive irrigation and are ill-suited to the desert climate. In Kilamba, green space on the western edge of the city was envisioned by planners as a park, but few residents use the space.

5.2.5. Sprawling development models encroach on peri-urban croplands
Both Kilamba and Sheikh Zayed are located in countries that face chronic food insecurity. Neither New Town addresses this issue from a spatial planning perspective.

5.2.6. Land values provoke 'low-cost / high risk' settlement patterns
By strictly regulating against informal commercial or residential activities, both Sheikh Zayed and Kilamba relegate low-income groups to areas outside their borders. These areas are generally more vulnerable to shocks, and lack the basic urban services offered within the New Towns.

These spatial challenges recur repeatedly in the New Towns included in this research. Each example, however, faces idiosyncratic challenges that originate from each unique combination of urban model and local conditions. In Sheikh Zayed, for example, the design does not take the desert climate into consideration, and heavy irrigation is used within gated compounds to produce green space. In Kilamba, new residents must adjust to condominium apartments, an architectural typology unknown in that country that has resulted in various disputes (Interview Marques 2016). While each example will face an individual set of challenges, identifying the spatial challenges that appear repeatedly among contemporary New Towns can help illuminate a general approach that can, in turn, be tailored to individual sites.

6. Discussion: towards the development of an alternative planning approach for African New Towns

As evidenced by the examples presented in this paper, the combination of rigid planning models and the implicit vulnerabilities of emerging and threshold economies has created a generation of New Towns that – taken as a group – increase spatial segregation and do not address increasingly urgent environmental realities. As discussed in section 3.2, the urban models commonly used in these New Towns have arrived in contemporary Africa divorced from their original political, cultural and historical contexts. Of the examples presented here, both the Chinese grid model and the American suburban model have problematic social and environmental implications when applied without consideration for the local Angolan or Egyptian context, respectively. As a result, this paper has questioned their appropriateness in the these urban landscapes. Climate change and its associated weather events will exacerbate the challenges that residents of these and other New Towns will face in the future. As Fainstein and Campbell (2012, 418) have argued: 'Economic segregation leads to environmental segregation: the former occurs in the transformation of natural resources into consumer products; the latter occurs as the spoils of production are returned to nature.' Throughout many African countries, the combination of economic and climatic vulnerabilities creates a situation where institutions do not have the resources to respond effectively to threats, nor the capacity to act pre-emptively to reduce those vulnerabilities. This section explores the potential for future New Towns to become part of a more adaptive and inclusive planning paradigm.

6.1 Adaptive and inclusive planning approaches for New Towns

These complex challenges can seem overwhelming. Adaptive and inclusive planning strategies provide an alternative way forward. Adaptive planning strategies are based on a systemic perspective that addresses both urban form and processes. They also take a multi-scalar approach, with consideration of implications for national development, regional networks and nodes as well as local existing qualities, down to the neighbourhood level. Adaptive planning allows planners to engage social and environmental realities through more inclusive design and planning processes. By sensitively considering ecological site specificities, adaptive planning leaves room to adapt generic principles to the unique characteristics of individual places. In African New Towns, applying adaptive planning principles could break down the physical and economic barriers that are currently in place, and encourage more inclusive, environmentally responsive urban development (Figure 4).

This research proposes that future New Towns in Africa could also benefit from an extension to current adaptive planning practice that links the political idea of active citizenship with design strategies. This may have an empowering effect on groups that are currently marginalized and regulated against by many New Town authorities. Faranak Miraftab (2004, 1) identifies two useful concepts that further illuminate the 'full range of spaces within the informal area where citizenship is practiced.' She describes 'invited spaces' as,

> the ones occupied by those grassroots and their allied non-governmental organizations that are legitimized by donors and government interventions. 'Invented' spaces are those, also occupied by the grassroots and claimed by their collective action, but directly confronting the authorities and the status quo. (Miraftab 2004, 1)

This radical approach serves as a useful reminder that the degree of formal tolerance for unregulated spatial appropriation and the active resistance of their inhabitants vary greatly, and that both of these must be taken into account when considering planning processes. This nuanced consideration of

Figure 4. As part of an adaptive and inclusive planning process, workshops with multi-disciplinary stakeholders can be tools for collaboration and bridge the gap between practitioners and residents. By engaging (future) residents and other local actors in an ongoing dialogue, interactive planning tools such as focus groups and design charrettes can provide planners with information on the local context that may otherwise remain inaccessible. Residents may gain a sense of shared authorship of the project through active involvement in the (design) decision-making process. Image © Rachel Keeton 2017.

top-down and bottom-up interactions supports an idea that is already integral to adaptive planning: increasing the capacity for change within a system. In future African New Towns, there is an opportunity to rethink the current approach and move towards more holistic planning processes that engage citizens and organizations from the full societal spectrum.

The identification of 'invited' and 'invented' spaces thus provides a clue for the development of planning principles that address spatial challenges but also leave room for individual personalization and variation. Originally, the concepts of 'invited' and 'invented spaces of citizenship' are focussed on political rather than physical places (Miraftab 2004, 3). Here, the terminology is considered from a spatial perspective: there are urban spaces where the informal economy and its supporting architecture is tolerated, but occupants of these spaces remain at risk indefinitely. Shifting political winds and changing macroeconomic situations can threaten their perceived permanence. Truly 'invited' spaces, then, would be ones that not only accommodate informal processes spatially, but that also acknowledge the intersection of regulated and unregulated spatial usages. They would, potentially, reduce the turbulence created by uncertainty and inform a new typology that integrates the provision of basic urban services with the capacities of the informal economy.

This research therefore suggests the need for an alternative approach to current planning practice associated with African New Towns. We see the potential for space where the processes and structures related to the informal sector are legitimized by state or parastatal interventions, thus building a more adaptive urban environment that is able to respond to changes in the environment and society. In order to do so, further research is needed to develop a set of principles based on the spatial challenges specific to African New Towns and the supportive dialogue between bottom-up and top-down organizations conceptualized by Miraftab. These principles can then be used to guide planning processes and ensure the range of challenges are more effectively addressed.

7. Conclusion

The current New Town planning approach deployed across the continent has failed to effectively address the social, ecological and spatial challenges of individual, contemporary, African urban environments. As illustrated by the example of Kilamba, Angola, a Chinese grid city may effectively house a large number Angolan residents in the short term, but it misses an opportunity to provide engaging public spaces and necessary facilities to support daily life. It also fails to anticipate a large community that develops at its border, and the intimate social and economic bonds between these two areas. How, then, to approach these challenges? The solution lies in an alternative planning method. From the specific challenges identified by this research, it is clear that a more integrated, holistic approach could better address the complexities of urban Africa.

One alternative could be an adaptive approach that engages both adaptive and inclusive planning values, and takes inspiration from Miraftab's concept of 'invited spaces' by providing a stable organization framework yet maintaining flexibility for infill and variation directly through residents. Adaptive planning aims to allow urban environments to change in concert with external or internal stimuli, thus constantly responding to changing conditions over time. Adaptive planning can therefore be understood as planning that that embraces social and ecological specificities and acknowledges the diversity of different contexts. Inclusive planning addresses specific social concerns such as tolerance and social cohesion, and aspires to address the needs of all stakeholders, including traditionally marginalized groups. By widening the scope of adaptive planning to accommodate grassroots organizations and embrace diversity among citizens, it may be possible to develop more adaptive and inclusive New Towns in Africa.

Close consideration of the spatial challenges identified in this paper indicates a way forward, and the next step is linking these challenges to concrete alternatives. Translating these alternatives into a set of planning principles for African New Towns and making them available to urban planners, developers and residents for evaluation may be a useful test of their effectiveness. A review of their spatial implications 'on the ground' might then be tested by conducting a pilot case on an

existing New Town: working with developers, residents, and other key stakeholders to understand the practical applicability of the proposed principles.

The effect of current New Town planning models is to exacerbate social and ecological challenges rather than contribute to their alleviation. Returning to the original definition of sustainable development as planning for future generations, it is critical to reconsider the long-term consequences of this type of development. To ensure inclusionary planning, designers and public policy makers must be bold: they are needed to make cities where everyone has equal access to public services, and a sustainable long-term future.

This paper has identified spatial challenges specific to the contemporary African New Town typology and acknowledged potential areas of improvement for urban planning in future African New Towns. It has also proposed an alternative planning approach based on adaptive and inclusive planning that embraces social and ecological specificities and acknowledges the diversity of different contexts.

With the goal of moving towards an alternative planning approach informed by adaptive and inclusive planning values, this research has also highlighted the need for continued investigation to translate the spatial challenges identified here into a coherent approach that acknowledges and leverages existing specificities of individual geographic, historical, and social contexts.

By challenging the current planning paradigm, African New Towns have the potential to be extremely useful tools in the continent's shift from predominantly rural towards urban landscapes. This paper argues that by translating spatial challenges into potentials and conducting further research on implementation, these New Towns can become more inclusive, ecologically sustainable, and better able to adapt to diverse stimuli at different scales and over different time periods.

Notes

1. This phrase is also employed by Susan Parnell and Edgar Pieterse in reference to the continent's rapid twenty-first century urbanization in: Parnell and Pieterse (2014).
2. Marketing materials on websites from these developments use strikingly similar vocabulary to indicate family values and high quality living space. They promise: 'your dream home in a unique and serene environment for you and your family' (Appolonia 2017); 'a home for you and your family, with all that is expected from 21st century comforts and convenience' (Eko-Atlantic 2017); and 'you will be sure to find a serene and well-planned space dedicated to you' (Tatu City 2017).

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References

Abubakar, I. R., and P. L. Doan. 2017. "Building New Capital Cities in Africa: Lessons for New Satellite Towns in Developing Countries." *African Studies* 76 (4): 546–565. doi:10.1080/00020184.2017.1376850.
Addington, L. A., and C. M. Rennison. 2013. "Keeping the Barbarians Outside the Gate? Comparing Burglary Victimization in Gated and Non-Gated Communities." *Justice Quarterly* 1. doi:10.1080/07418825.2012.760644.

Al-Aees, S. 2016. Social Housing Unit Owners Demonstrate in Front of NUCA for Once Again Failing to Respond to Demands. *Daily News Egypt*, October 24. http://www.dailynewsegypt.com/2016/10/24/social-housing-unit-owners-demonstrate-front-nuca-failing-respond-demands/.

Amnesty International. 2011. Egypt: Stop Forced Evictions and Consult Slum-Dwellers to Resolve Housing Crisis, August 23. Accessed July 12, 2017. https://www.amnestyusa.org/reports/egypt-stop-forced-evictions-and-consult-slum-dwellers-to-resolve-housing-crisis/.

Anderson, D., and R. Rathbone, eds. 2000. *Africa's Urban Past*. Oxford and Portsmouth, NH: James Currey and Heinemann.

Appolonia. 2017. Accessed March 17, 2017. http://www.appolonia.com.gh.

Avermaete, T., S. Karakayali, and M. Von Osten, eds. 2010. *Colonial Modern: Aesthetics of the Past Rebellions for the Future*. London: Black Dog Publishing.

Baowen, M. 2016. Interviewer: R. Keeton, January 15.

Bigon, L. 2013. "Garden Cities in Colonial Africa: A Note on Historiography." *Planning Perspectives* 28 (3): 477–485. doi:10.1080/02665433.2013.800716.

Bloom, N. D. 2001. *Suburban Alchemy: 1960s New Towns and the Transformation of the American Dream*. Columbus: Ohio State University Press.

Burby, R., and S. Weiss. 1976. *New Communities, USA*. New York: Lexington Books.

Cain, A. 2014. "African Urban Fantasies: Past Lessons and Emerging Realities." *Environment and Urbanization* 26 (2): 561–567. doi:10.1177/0956247814526544.

Coquery-Vidrovitch, C. 2005. *The History of African Cities South of the Sahara: From the Origins to Colonisation*. Princeton: Markus Wiener Publishers.

Eko-Atlantic. 2017. Accessed March 17, 2017. http://www.ekoatlantic.com.

Fainstein, S., and S. Campbell. 2012. *Readings in Planning Theory*. 3rd ed. Chichester: Wiley-Blackwell.

Flor, A. T. 2016. Interviewer: R. Keeton, January 17.

Gaffey, C. 2017. Lost ancient Muslim city discovered in Ethiopia could reveal details of Islam's history in Africa. *Newsweek*, June 16.

Galantay, E. 1975. *New Towns: Antiquity to the Present*. New York: George Braziller.

Hallegatte, S., A. Vogt-Schilb, M. Bangalore, and J. Rozenberg. 2017. Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters. *Climate Change and Development*. Washington, DC: World Bank.

Herbert, C. W., and M. J. Murray. 2015. "Building from Scratch: New Cities, Privatized Urbanism and the Spatial Restructuring of Johannesburg after Apartheid." *International Journal of Urban and Regional Research* 39: 471–494. doi:10.1111/1468-2427.12180.

Howard, E. 1898. *To-morrow: A Peaceful Path to Real Reform*. London: Swan Sonnenschein & Co., Ltd.

Human Rights Watch. 2011. Angola: Stop Forced Evictions, August 25. Accessed July 12, 2017. https://www.hrw.org/news/2011/08/25/angola-stop-forced-evictions.

Human Rights Watch. 2013. Angola: Scores Detained, Convicted After Forced Evictions, February 26. Accessed July 12, 2017. https://www.hrw.org/news/2013/02/26/angola-scores-detained-convicted-after-forced-evictions.

INTERBORO. 2016. *The Arsenal of Exclusion & Inclusion: 101 Things that Open and Close the City*. New York: Actar.

Keeton, R. 2011. *Rising in the East: Contemporary New Towns in Asia*. Amsterdam: SUN.

Keeton, R., and M. Provoost, eds. 2019. *To Build a City in Africa: A History and a Manual*. Rotterdam: Nai010.

Lu, D. 2006. *Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005*. New York: Routledge.

Marques, I. 2016. Interviewer: R. Keeton, January 18.

Mazzone, D. 2017. "The Dark Side of a Model Community: The 'Ghetto' of el-Lahun." *Journal of Ancient Egyptian Architecture* 2: 19–54.

Metwally, M., and S. S. Abdalla. 2014. *Impact of Gated Communities on the Urban Development of New Cities in Egypt*. Cairo: CPAS Egypt.

Miraftab, F. 2004. "Invited and Invented Spaces of Participation: Neoliberal Citizenship and Feminists' Expanded Notion of Politics." *Wagadu: Journal of Transnational Women's and Gender Studies* 1: 1–7.

Mumford, L. 1959. *The Story of Utopias*. Gloucester: Peter Smith.

Murray, M. 2015. "'City Doubles': Re-Urbanism in Africa." In *Cities and Inequalities in a Global and Neoliberal World*, edited by F. Miraftab, D. Wilson, and K. Salo, 92–109. New York: Routledge.

Murray, M. 2017. "Frictionless Utopias for the Contemporary Urban Age: Large-Scale, Master-Planned Redevelopment Projects in Urbanizing Africa." In *Mega-Urbanization in the Global South: Fast Cities and New Urban Utopias of the Postcolonial State*, edited by A. Datta and A. Shaban, 31–53. New York: Routledge.

Myers, G. A. 2003. *Verandahs of Power: Colonialism and Space in Urban Africa*. Syracuse: Syracuse University Press.

Njoh, A. J. 2009. "Urban Planning as a Tool of Power and Social Control in Colonial Africa." *Planning Perspectives* 24: 301–317. doi:10.1080/02665430902933960.

Parnell, S., and E. Pieterse. 2014. *Africa's Urban Revolution*. London: Zed Books.

Patel, S. 2014. Stone Towns of the Swahili Coast. *Archaeology*, January 2014. Accessed December 13, 2017. https://www.archaeology.org/issues/116-1401/features/1634-swahili-coast-towns.

Pieterse, E. 2015. "Africa's Urban Imperatives." In *Cape Town: Densification as a Cure for a Segregated City*, edited by M. Provoost, 10–25. Rotterdam: INTI / Nai010.

Pinder, D. 2005. *Visions of the City: Utopianism, Power and Politics in Twentieth Century Urbanism*. Edinburgh: Edinburgh University Press.

Property Finder website. Accessed August 4, 2017. https://www.propertyfinder.eg/en/buy/giza/villas-for-sale-sheikh-zayed-city-sheikh-zayed-compounds.html.

Provoost, M., and R. Keeton. Forthcoming. "African New Towns." In *21st Century New Towns*, edited by A. Forsyth and R. Peiser. Philadelphia: University of Pennsylvania Press.

Ross, E. 2015. "The Grid Plan in the History of Senegalese Urban Design." In *Urban Planning in Sub-Saharan Africa: Colonial and Post-Colonial Planning Cultures*, edited by C. N. Silva, 110–128. New York and London: Routledge.

Salinger, J., M. V. K. Sivakumar, and R. P. Motha, eds. 2005. *Increasing Climate Variability and Change: Reducing the Vulnerability of Agriculture and Forestry*. Dordrecht: Springer Netherlands.

Silva, C. N., ed. 2015. *Urban Planning in Sub-Saharan Africa: Colonial and Post-Colonial Planning Cultures*. New York: Routledge.

Smith, C. 2017. "'Our Changes'? Visions of the Future in Nairobi." *Urban Planning* 2 (1): 31–40. doi:10.17645/up.v2i1.834.

Tatu City. 2017. Accessed March 17, 2017. http://www.tatucity.com.

United Nations. 2014. *World Urbanization Prospects 2014 Revision*. New York: United Nations.

van Noorloos, F., and M. Kloosterboer. 2018. "Africa's New Cities: The Contested Future of Urbanisation." *Urban Studies* 55 (6): 1223–1241. doi:10.1177/0042098017700574.

van Noorloos, F., and M. Leung. 2017. "Circulating Asian Urbanisms – An Analysis of Policy and Media Discourse in Africa and Latin America." In *Reconfiguration of the Global South – Africa and Latin America and the 'Asian Century'*, edited by E. Woertz, 125–142. London / New York: Routledge.

Watson, V. 2014. "African Urban Fantasies: Dreams or Nightmares?" *Environment and Urbanization* 26 (1): 215–231. doi:10.1177/0956247813513705.

World Bank. 2016. *Africa's Cities: Opening Doors to the World*. Washington, DC: World Bank.

World Bank. 2018. Accessed May 22, 2018. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD.