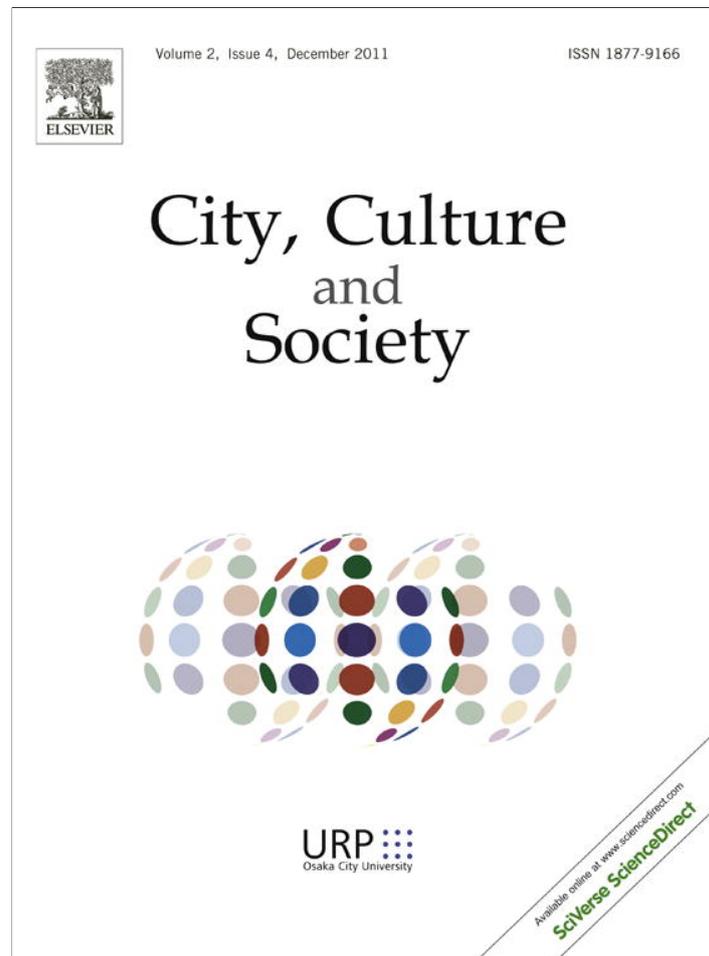


Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

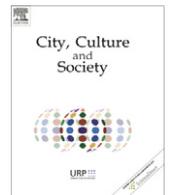
Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>

Contents lists available at [SciVerse ScienceDirect](http://www.sciencedirect.com)

City, Culture and Society

journal homepage: www.elsevier.com/locate/ccs

Evolution of urban housing strategies and dweller-initiated transformations in Nairobi

Peter A. Makachia*

Department of Architecture and Building Science, University of Nairobi, P.O. Box 30197, 00100 Nairobi, Kenya

ARTICLE INFO

Article history:

Received 26 May 2011

Received in revised form date 16 September 2011

Accepted 4 November 2011

Available online 29 December 2011

Keywords:

Dweller-initiated transformation

Housing strategies

Kenya

Nairobi

Social inclusion

ABSTRACT

In her century of existence, Nairobi has served as a laboratory of various housing strategies targeting the indigenous Africans and the poor. Discriminated based on racial segregation during colonisation, the poor have also been the object of post-colonial economic marginalisation. Consequently informal settlements and dweller-initiated transformations of formal housing has become their only mode of urban domicile. The paper looks at the later model and isolates the strategic policy and design choices that have guided the dwellers' drive to transform the provided houses. The investigation uses an historical review of related literature in existing housing estates in city's Eastlands' District. Further, a case study of Kaloleni Rental Estate from the district was undertaken. The resultant dwellings point to informalisation leading to deterioration through use of 'temporary' materials and unplanned space uses in these formal schemes. The strategies based on modernist templates which ignored consultation, local cultural spatial paradigms and basic functional needs are faulted for the proliferation of these undue transformations that compromise the living environments. Further, the continued lack of tenant security in transforming dwellings has aided in the continual physical and social deterioration of neighbourhoods. The recommendations include a phased design guided densification model, socially inclusive through the incorporation of the existing dwellership and their participation.

© 2011 Elsevier Ltd. All rights reserved.

Introduction

Strategies in urban housing in Nairobi, the capital city of Kenya, are rooted in the city's genesis as a colonial segregated city based on race, that later was reiterated by a class-based differentiation. These roots of urban housing strategies are the basic ingredients of the dweller-initiated transformations (DITs) that now dominate the cityscape in residential districts. Indeed, these DITs, founded through informal urbanism (Anyamba, 2011), remain the most pervasive imprint of individual identities in housing estates.

The colonial urban policies were about social exclusion of the African, even if they were substituted by more accommodation through the development of African estates after WW2 (Hake, 1977; Stren, 1978). In fact, this accommodation relied on 'apartheid'-like principle of separate standards for each race. Thus couched in accommodative principle for each racial grouping, the provisions were

never the same, and only furthered the racially guided urban strategies. Indeed, they were imposed in furtherance of the colonial urban project of domination (Myers, 2003) of the Europeans over the native Africans. These were non-consultative strategies, exclusionist rather than socially inclusive, and not akin to the pre-existing Kenyan human settlement tradition (Andersen, 1977; Anyamba & Adebayo, 1994). The paper takes the position that this was essential in generating the transformations (Makachia, 2010) that later emerged and the added mal-functionality in the urban space of 3rd World cities. The position is that the transformations narrate the dwellers' values, matched with their economic, social and physical objectives, and ill-captured in formal strategies.

The first parts of the paper illustrate through literature explorations of historical cases of native African-focussed housing strategies in the city of Nairobi. It shows how housing strategies remained about accommodating the group and the poor. The deliberate strategy of Neighbourhood Unit Concept (NUC) and its examples are given further focus as it shaped contemporary housing strategies. The Eastlands district (Figs. 1 and 2) was the site for most

* Tel.: +254 20 2724520-9x207; mobile: +254 724 484443, +254 733 936329.

E-mail addresses: makachia@uonbi.ac.ke, pamakachia@gmail.com

URL: <http://www.uonbi.ac.ke>

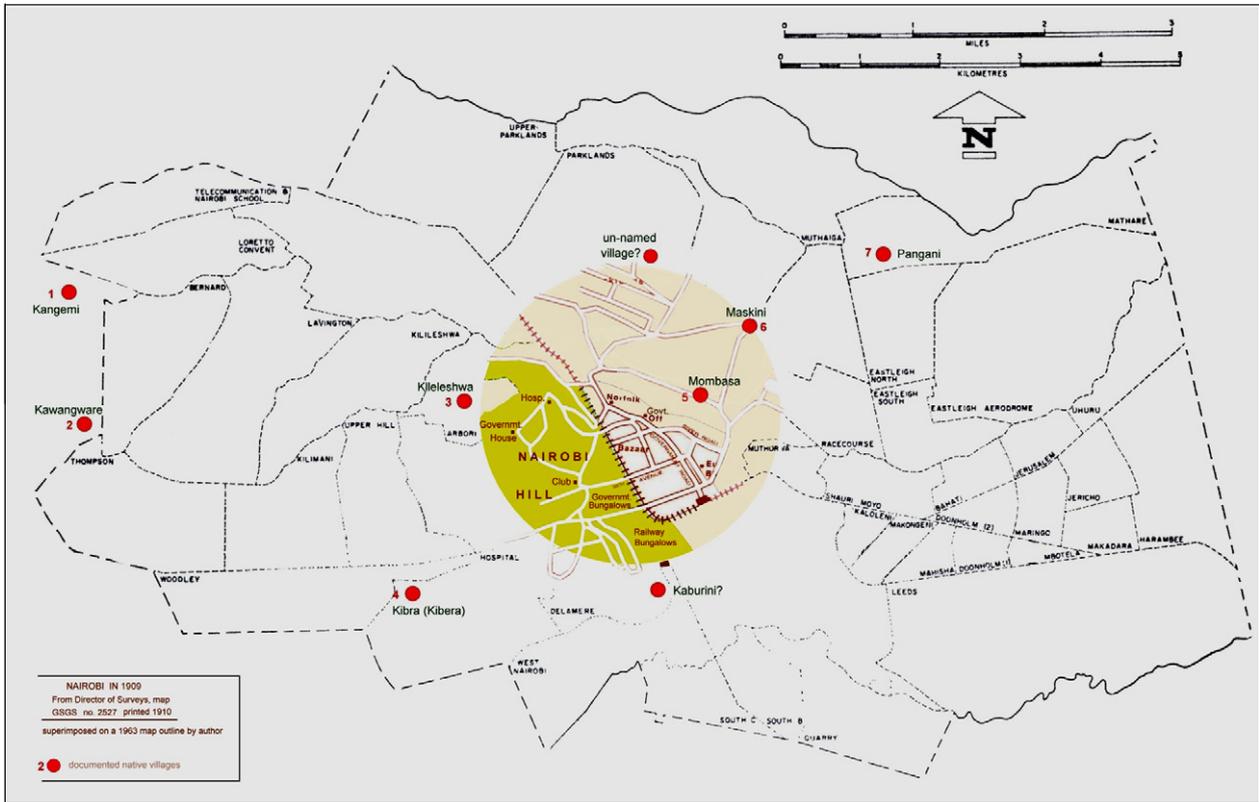


Fig. 1. 1963 map of Nairobi showing location of early informal villages. Highlighted circle shows original centre controlled by the British colonial administration in 1901. The higher altitude 'hill' area (green/darker) was reserved for Europeans (based on Survey of Kenya 1910 map).

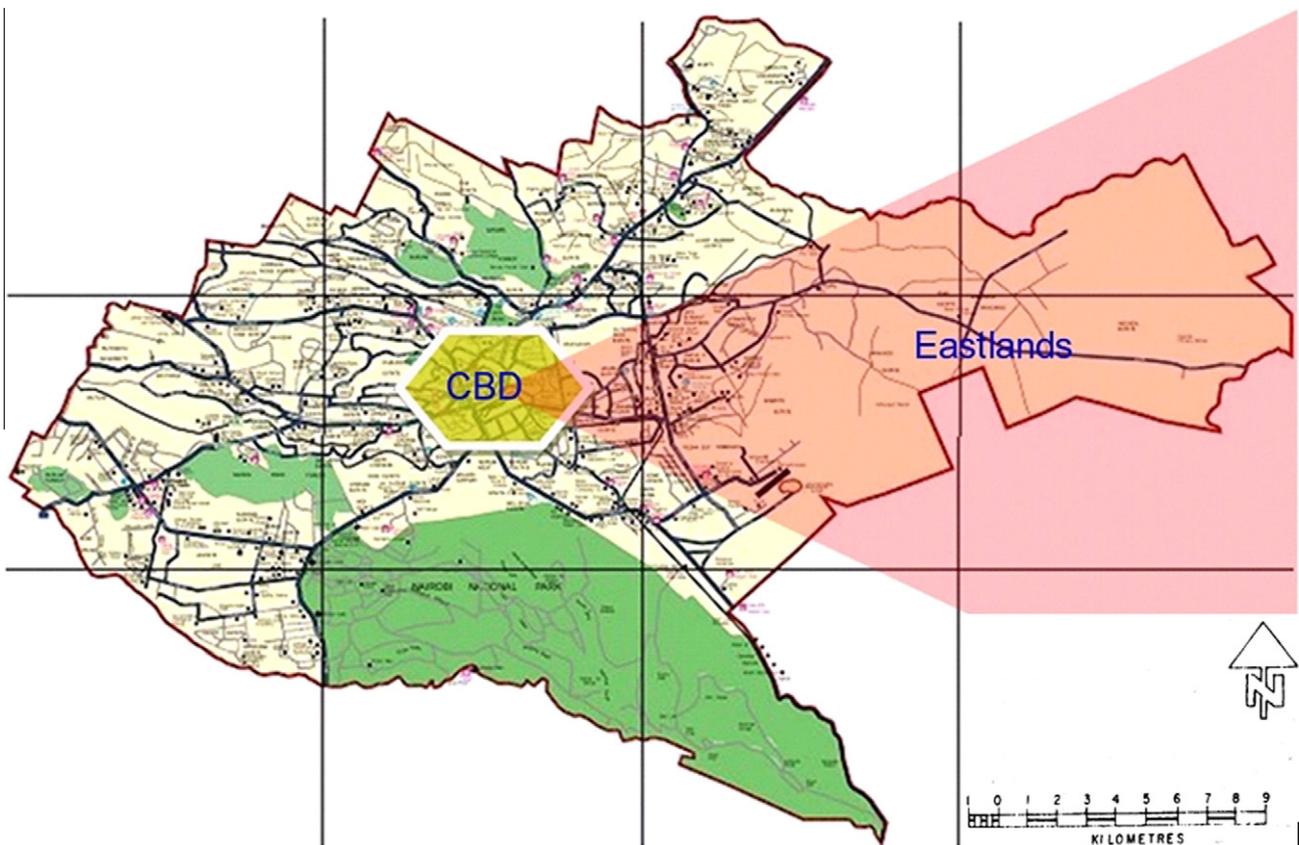


Fig. 2. Current map of Nairobi showing Eastlands and CBD (constructed by author).

of these strategies as was Kaloleni Estate, the case used for empirical illustration in the last part of the paper which precedes reflections.

Within the problematic of urban housing, inadequately provided for the poor, the strategies are the concern because of their failure in deleting the indigence state in urban human settlements. It is a common denominator of most 3rd World cities and, strangely, the more advanced economies of Europe and Anglo-America (Mizuuchi, 2010). In both these case scourges that bedevil humanity in the 21st century, it is posited that it is a flawed lack of awareness of social inclusiveness in urban design. It is the recognition and academic awareness of the informal transformations in housing estates that is the first step towards guaranteeing desirable sustainable urban solutions.

Unlike advanced cities in capitalist countries like Asia, the economic problems in African cities are perennial, and are mostly *not* instanced by natural disasters and/or momentary 'economic depression', like the financial crises and recent worldwide recessions (Cheng & Yang, 2010; Mizuuchi, 2010). These are cities rooted in their histories of colonisation and succeeded by the mismanagement by post-colonial regimes. In a few cases like Kaloleni Rental Estate,¹ it is a case of regenerating urban communities whose physical and social environments have long been neglected and/or mismanaged by the city authorities. From a purely utilitarian perspective, DITs have emerged to fill this void. However, the cultural void instanced by the lack of a consultative process in the evolution of the formal estates is also put to the pedestal for scrutiny.

Echoing the sentiments of the Urban Research Plaza (Sasaki, 2010), the paper vouches for a bottom-up paradigm in 'creative' urban environments in poor economies, and advocates accommodative policies and not evictions/demolitions. This also recognises that the dwellers are (at the very least) only 'homeless' by not having decent shelter, and certainly not 'vagabonds'. They are thus victims of the penury circumstances of their existence and an un-supportive state. Due to the perennial nature and large scales of the problem, this housing situation has hardly attracted transitory housing solutions, possible in elsewhere (Mizuuchi, 2010).

Further, most of the 3rd World government regimes have never put in place social security systems for the same. Non-Governmental Organisations (NGOs) and Community-Based Organisations (CBOs) have, for several decades, been pro-active in these human settlements (Hansen & Vaa, 2004; Malombe, 1996; Taylor, 2005) with however only insignificant positive outcomes. It is however recognised that these civil society entities, are necessary in bridging the chasm between the citizens and their governments, in order to combine official interventions and urban spatial policies.

The methods used included descriptions from literature of strategies that guided Nairobi's evolution. This involved analyses of archival information including graphical material. This was succeeded by empirical evaluation of selected

estates. In Kaloleni Estate, detailed investigations engaging survey tools, imagery and measurements, based on Case Study methodology as expounded in Zeisel(2006), Groat and Wang(2002) and Yin(2003), among others.

The colonial roots of the city of Nairobi

The colonial administration's Uganda Railways Committee's decision in 1895 (chaired by Lord Salisbury), to construct a railway linking Indian Ocean to the East African hinterland, marked the genesis of Nairobi. The location served initially, as the constructors' base, given the rougher terrain towards Lake Victoria. The location was environmentally suitable² and it was prior used by the pastoralist Masai (also Kikuyu and Ogiek (Hake, 1977, p. 19)) for their cattle's water. It was to them: '*enkare nyro-bi* – the 'place of cold water' (Nevanlinna, 1996, p. 91). However, though the Nairobi 'urban settlement' was directly a result of its centrality in relation to the railway construction, it eventually was used to colonize the Kenyan hinterland, characterised then by dispersed rural settlements (Burton, 2002, p. 4).

The spatial facet of the advent of colonialism bred modernism in Kenya. Key to this, was the urbanisation spatial paradigm (Myers, 2003), western dwelling forms and construction technologies as well as other forms of spatiality. This modernism was however always couched in cultural alienations and racist insinuation as the early city master plans (Nevanlinna, 1996) illustrate. Indeed, the first plan (shown in Fig. 1) for Nairobi as a Railway Town (Emig & Ismail, 1980, pp. 9, 11–13) was ostensibly to cater for "the European employers of the railway and the European and Asian traders" and "completely neglected the Asian labourers or coolies and Africans". In this railway town, residential areas were reserved only for (i) senior officers, who were European, (ii) sub-ordinates, who were European bachelors and Asian sub-ordinates, and (iii) European and Asian traders (Emig & Ismail, 1980, p. 9, 10). The initial strategy for African shelter was thus of exclusion, and this bred the early informalisation of the city. Hake (1977) justifiably referred to it as the 'self-help city' in his seminal treatise of this 'African Metropolis'.

The early informal settlements in Nairobi

African habitation of the city of Nairobi began when their labour³ was required in the emerging urban settlement. This entailed walking daily from their villages, a sce-

¹ These transformations have attracted negative official reactions including forceful evictions mirroring narrations of squatting from more advanced cities like Seoul (Kim, 2010). This is despite the fact that DITs are by legal tenants in Council (CCN) estates, unlike the squatting common elsewhere in Nairobi's informal settlements.

² Early discussions of the suitability of the site cite the suitability for railway engineers, but poor for construction of durable buildings due to the predominant 'black cotton' soils, health and sanitary engineering. The railway station was located on a level ground suitable for the railway engineer but ill-suited for administration and panoptical control, according to a J.S. Pringle (Thornton-White et al., 1948, p. 12). Indeed famed British statesman, Churchill (1908) refers to its location as lacking in 'foresight and of a comprehensive view'. In the present state, Nairobi remains ideal with comfortable weather throughout the year and varied geological conditions. These negative comments were aimed mainly at addressing the city's suitability for situating administrative and residential infrastructure for domination of the populace by the colonizers.

³ African wage labour was equally imposed as part of the colonial project. This was through the introduction of the money economy through forceful taxation, registration, alienation of land and the consequent demand for cash incomes given the crowding in the 'Reserve' areas.

nario unsustainable in the long run. Other than a few Africans who occupied servants' quarters in European areas on the 'hill' and unsanitary conditions within the Indian Bazaar, the rest inhabited informal settlements' on the city's periphery (Fig. 1). This informalisation intensified after the WW1 through consolidation of settlements like Maskini, Pangani and Mombasa (Hake, 1977, p. 24) (Fig. 1). This pieced together evidence of the informalisation of the emergent Nairobi city townscape, and was a result of the urban policy of exclusion of the African race. For Hake (1977, p. 24), this was 'in embryo, was the self-help city, whose citizens were to live in the interstices and fringes of Nairobi through the years that followed'.

Urbanisation for this native Kenyan entailed abandoning the lifestyle of their traditional built form and adopting imposed spatial values crudely encapsulated in the informal structure. Images (Figs. 5 and 6) of these informal structures/settlements hardly bore any reference to the African traditional house typologies in Fig. 4 (Andersen, 1977; Anyamba & Adebayo, 1994). However, some dwellings found in these settlements bore the architecture, *not* of the native inhabitants, but of coastal origin and Swahili⁴ culture. This was because the coastal communities, mostly of Muslims persuasion, used the overland 'caravan route' for trade with

Box 1. The Swahili House

The Swahili House is perhaps the only typology of African housing to receive acceptance as suitable habitation in an East African urban setting. Thus Stren (1978) cites some inherent advantages of the unit as evident in Mombasa, the coastal and principal port city in Kenya:

- *Environmental*: Through use of local materials of *boriti* (mangrove poles) and *udongo* (mud) for walls and *makuti* (palm leaves), as well as high ceiling height; a thermally comfortable environment is achieved.
- *Social*: Because of spatial organisation and layout of the rooms, services and the courtyard, privacy for women, an important consideration for Muslim culture is assured. This also allows the extended family privacy through independence of the rooms. Further, this courtyard serves functional requirements of cooking and laundry washing; all in the female domestic functional domain.
- *Construction cost*: Because of the use of local materials and artisanry, it is relatively cheap to build.
- *Economic returns*: The organisation (independence) of the rooms around a corridor lends itself to room subletting without compromising privacy, ensuring rental returns. Further the frontal veranda is easily convertible into small-scale shop for supplementary income.

⁴ Swahili is a cultural group that accrued from the interactions of the Arab traders and coastal Bantu African ethnicities. Unlike the curvilinear dwelling forms with conical roofs (Fig. 4) (Andersen, 1977; Anyamba & Adebayo, 1994; Elleh, 1997) common amongst the continental Bantus, the Swahili type (and coastal Bantu) is rectilinear (Box 1, Figs. 7 and 8).

Thus he reiterates:

"Not only does the design of Swahili house lend itself to lodgers, but the front house can easily be modified to accommodate a small shop. The small-scale trade that is part of the texture of life in Swahili neighbourhoods adds both to the profitability of the building for the landlord with a well-located plot and convenience of the householders and tenants." (Stren, 1978, p. 36)

- *Adaptability and change*: Not only is the unit adaptable to the changes of use, but also technological transformation. Thus improvements for structural stability and longevity are possible, and are made in respect of the use of new materials like concrete blocks for walls and corrugated iron roofing sheets (CGI). Indeed, Nguluma (2003) reiterates this advantage in her study of the modernisation of the same typology in Dar-es-salaam.
- *Spatial hierarchy*: Of rooms, independently accessed from a corridor and a verandah used a relaxing space and for outdoor food preparation. These combine to create hierarchies from public, semi-public, semi-private and private spaces (Shihembetsa, 1995, p. 158).

Thus, the Swahili house is a design for owner-occupation subletting, commercial use, is affordable to all, and is suited to the environment, especially its origins at the coast.

the hinterland (Hake, 1977, p. 24; Nevanlinna, 1996, p. 91). Evidently, the Swahili house was better attuned to urban housing than alternative native dwellings (Stren, 1978, p. 36) (Box 1, Figs. 7 and 8).

The African 'location' at Pumwani

Unlike the informal settlements that were spontaneous, the African 'location' at Pumwani was conceived to address native space demands in colonial urbanity (McVicar, 1968, p. 157; Myers, 2003). The site (and others to the east of CBD) became 'Eastlands' District (Figs. 1–3) that emerged as the preferred location and laboratory for African and later low-income housing. This notion of an African 'native location', rooted in the 1907 Bransby-Williams' Housing Report was realised in the years 1919–1922 (Hake, 1977, p. 36, 48). It aimed at regulating African settlements within the boundaries of city by providing serviced plots and permitting the erection of their own house (Hake, 1977, pp. 129–136).

Pumwani was ground-breaking not just because it recognised Africans as part of the urban citizenry, but also that the 'site and service' (S&S) concept entailed dweller-participation in the housing process. This was a precursor to the populist strategies ('sweat equity' (Hall, 1990)) in architecture (Tzonis, 1976) in the 1970s and fronted by Turner (1977; Burgess, 1982) through his 1950–1960s Peru lessons. This paradigm shift from 'providing' to 'supporting' (Hamdi, 1991), recognised the dwellers' control of the housing process, in contrast to



Fig. 3. Eastlands district (based on City Council of Nairobi (1995)).

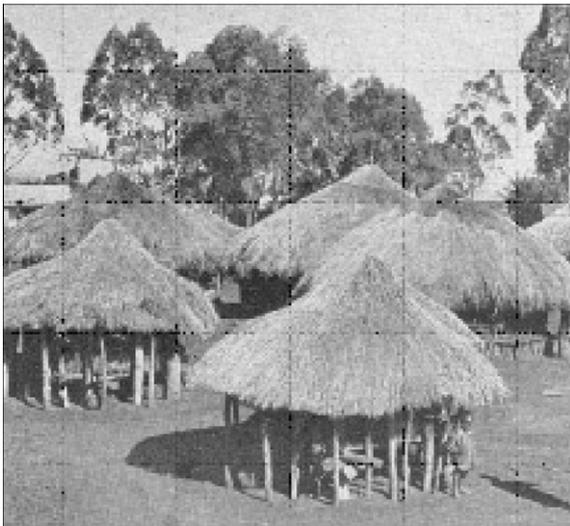


Fig. 4. A traditional Kikuyu homestead. Grass-thatched conical roofs on curvilinear mud and wattle walls or pole frames (Hake, 1977).



Fig. 6. Early Nairobi informal settlement Mathare valley (Hake, 1977).



Fig. 5. An informal structure pole/timber frames covered with paper/plastic/cardboard recycled sheets (Hake, 1977).

modernism where decision-makers were officialdom and professionals.

Referred to as ‘stands’, the plots, based on a ‘gridiron principle’ layout (Shihembetsa, 1995, p. 157), measured about 150 m², fronted roads and had communally provided services including water and sanitation. The first houses were of ‘temporary technology’⁵ of recycled tin-cans (*debe*) for roofing and mud/wattle walling. The Swahili DU was used (Figs. 7 and 8) whose core was 4-roomed and detached; and amenable to enlargement. Despite the virtues of the typology (Stren, 1978) (Box 1), the insistence of this DU type put paid to avenues for the majority African expression.⁶ Set-

⁵ This led to the scheme being referred to derogatively as ‘majengo’. This reference to material characteristics also later inferred social infamy reflecting the prevalence of vices like crime and prostitution. It translates from Swahili language neither as homes nor houses but ‘constructions’. A key socio-cultural dimension of Majengo was in the gender ownership composition and prevalent activities. According to Bujra (1975) ownership has been dominated by women ‘entrepreneurs’ who however thrived on ‘prostitution and brewing’ (Bujra 1975, pp. 213–215). This latter reality and connotative negative social attributes of Majengo has poured cold water on an otherwise solid effort to empower the African race in establishing urban presence in Nairobi. This scenario, common in the colonial city, still persists in present-day Nairobi. Bujra however thinks more positively of the women and lauds the economic empowerment so realised, and admonishes the logic skewed against these social activities she deems inevitable in an ‘exploitative colonial society’ (1975, p. 214).

⁶ The contention by Nevanlinna (1996, p. 296) that pre-colonial dwelling forms reflected particular cultural groups is unsubstantiated as it ignores the diversity of the majority African spatiality.

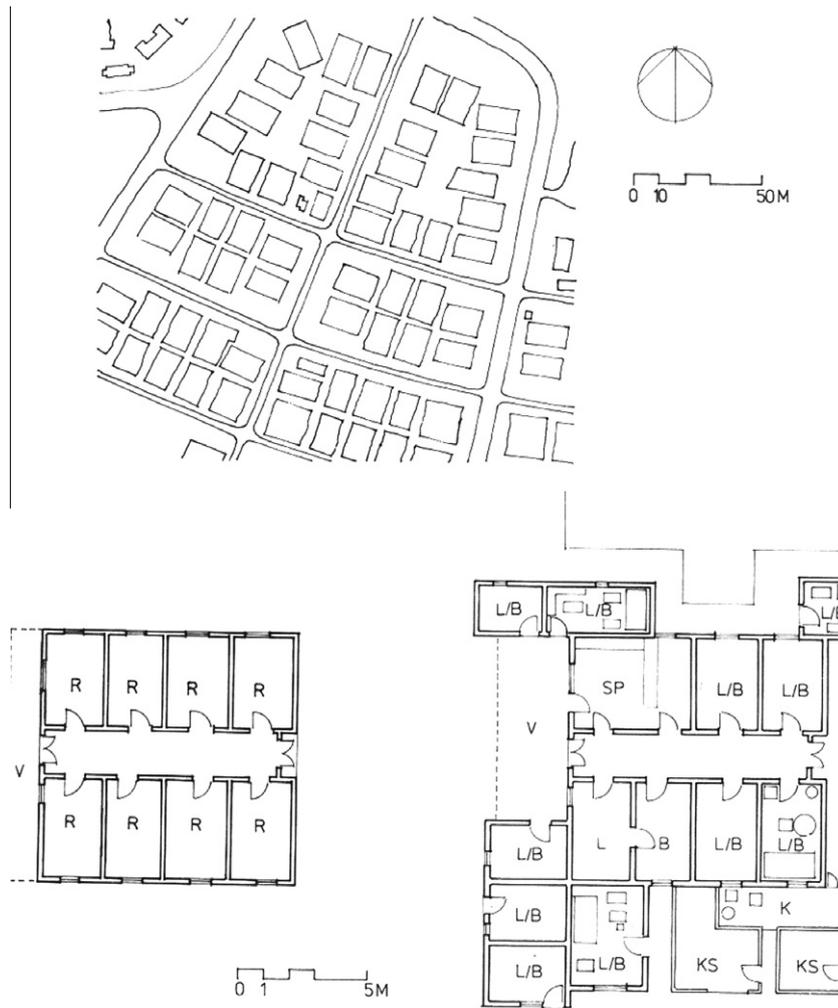


Fig. 7. Plan of the Swahili settlement and DU layouts in Pumwani (Nenalinna, 1996).



Fig. 8. View of Pumwani Street. Current roof profiles of Swahili Houses (author, 2004).

tlement activities in Pumwani began in 1919, but the dwellers had to be forcibly moved, as most were reluctant.⁷

⁷ The reluctance was, according to Anderson (2002, p. 242) because Pumwani was perceived as a resettlement area and not an estate, that was seemingly preferred by Africans. This is not however supported empirically and as reflected in the utilisation of future housing and DITs. For Hirst and Lamba (1994, p. 63), the high building costs were more the reason.

The S&S strategy in Pumwani was never replicated in subsequent colonial-era strategies, and this confirmed that it was never a tool for social accommodation but for control. Nor was it meant for dweller-empowerment; and instead, it was meant to corroborate the colonial spatial project of: (i) surveillance and observation (ii) segmented planning and a (iii) distinction between the ‘inside’ from ‘outside’, meant to create ‘order within frameworks’, deemed wanting in African settlements (Mitchell, 1988; Myers, 2003, pp. 50–53).

Pumwani was to demonstrate building codes which was never the case. For instance the plot cover (PC) stipulation of 50% was always contravened, and 80–90% PC was the norm (McVicar, 1968, pp. 158–159). Further, the Swahili typology was extendable, easily accommodating sub-tenants (Box 1) and in the process contravened set tenancy guidelines. Indeed, McVicar (1968, p. 263) correctly asserts that Pumwani did not conform to the ‘rigidly organised workers’ housing estates’ later in the colonial era.

According to Hake (1977, p. 41), the strategy was meant for social provision for the African populations, which contrasted with earlier social control efforts through demolitions, harshly employed in the early informal settlements. Myers’ (2003, p. 50) version that it was

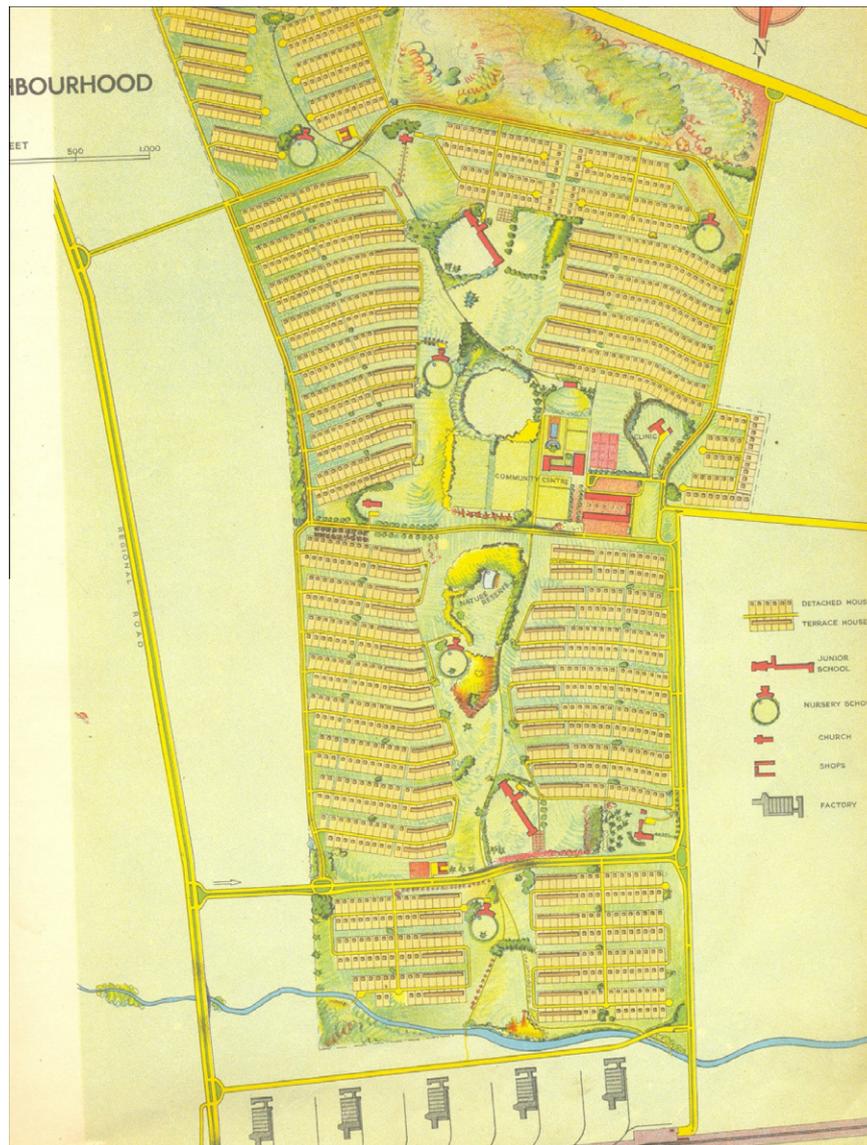


Fig. 9. TW neighbourhood model (Thornton-White et al., 1948).

more of a tool for 'dominative control' is more accurate and, indeed, later strategies were strictly planned. This included the 'estates', employer-built housing and also relied heavily on the Neighbourhood Unit Concept, discussed in the next sections.

The 'estate' strategies

The first African housing 'estate' was in 1929 at Kariokor, and consisted of a complete unitary block that was subdivided into cubicles. The basic concept was of shared spaces for mostly single labourers and demonstrated that the notion of a household was not at all well-entrenched, and only affirmed the notion of the 'transient' African urban worker. The dormitory typology was overwhelmingly derided, remained unpopular until the cubicles were converted to tiny rooms (Hake, 1977, p. 35), and to be later abandoned altogether.⁸

⁸ Understandably only literature references are made to this dormitory housing and no images are accessible.

In 1936, a different strategy was implemented at Shauri-Moyo (Hake, 1977, p. 50) and was composed of complete houses, and aimed to resettle dwellers from Pangani informal settlement. The DU layout cursorily resembled the core of Swahili house (Fig. 7), was composed of 3–6 habitable rooms linearly fronting a passage. The units were dysfunctional with minimal concern for privacy and transitional spaces. Accommodation of a family was thus restricted but currently, domestic chores like laundry and cooking are conspicuous and demonstrates the congestion prevailing in the spaces. Informal transformations accommodating mainly small-scale trade is the overt though perverse representation of legitimate physical spatial needs for commerce. Shauri-Moyo remains a CCN rental estate and this has contributed to the derelict images that now dominate the estate.

Other actors in housing provision were employers, like the Railway Corporation, and in 1939, erected houses for junior married employees at Muthurwa. Although it was meant to be socially more responsive through family accommodation (Hake, 1977, p. 51), this cannot be corroborated in

spatial provisions. The DUs had only one living space, a cooking verandah and common ablution blocks. Indeed, the gender imbalance persisted with a 1:8 female:male ratio (Hake, 1977, p. 52). The estate is now a subject to an urban renewal exercise and the units are being replaced with other urban elements like the hawkers' market and a public transport (*matatu*) terminus. Although several estates were implemented by the colonial governments and employer organisations, conceptually significant was the application of the Neighbourhood Unit Concept in the 1948 Nairobi Master Plan (Thornton-White et al., 1948), in the next section.

The Neighbourhood Unit Concept (NUC)

The NUC strategy was the core of the housing proposals in the Nairobi Master Plan (MP) (Thornton-White et al., 1948), and it was the mainstay of future housing in colonial and independent Nairobi. Renowned modernist, Ernst May (Frampton, 1992; Ogura, 2005; Panerai et al., 2004) also featured in the fray indirectly from his famed Frankfurt work via the USSR. His project proposals for African neighbourhoods significantly informed housing strategies.

The NUC was a popularly used concept in post-war UK (Panerai et al., 2004, p. 170) and had its origins in Howard's 'garden city' (1898). The 'city' composed of 30,000 dwellers was subdivided into 5000 people wards, a figure that later was used in the interpretation of the NUC units. Later, targeting an American audience, Perry (1929) further proposed a self-sustaining unit of between 5000 and 9000 people as suitable.

The TW Neighbourhood

In Nairobi, the NUC was of the product of South African consortium, diversely constituted: with Thornton-White, an architect/scholar, Anderson, an engineer and Silverman, a sociologist/scholar. It seemed well-suited to redress functional, technical and as well as social dimensions in African housing. The NUC aimed to create an urban community self-sufficient in commercial, social and recreational facilities, additional to the physical/technical infrastructural provisions. In the Perry scheme, the shops were located at one end for maximum accessibility, unlike the UK alternative where it was central (Panerai et al., 2004, p. 171). As is shown in Fig. 11, the TW Model tallied the UK option.

In the MP, the authors discussed the background to the African housing scenario in a condescending manner and according to Mann (1968, p. 147) were 'completely neutral on racial segregation but allowed for fair degree of economic class differentiation among non-European population'. The authors reiterated the position and asserted categorically that the MP was 'confined to the principles of planning which take their measure on the human satisfaction and technical needs' (Thornton-White et al., 1948, p. 49). Indeed, each NU was based on the number of families that could support one primary school, and the size was determined by the maximum distance travelled by school children. The catchment population was 10,000, provided with shops, public buildings, local service industries, schools and open spaces. A peripheral road, potentially a bus route, linked the units and other city segments.

An attempt to explain the logic of employee housing and the paucity of physical space in African DUs informed the proposal. For the authors, it was necessary to house staff since; 'the pioneering conditions of African colonisation' made it 'difficult to get local labour and keep it to a term of contract'. They saw African workers as transitory in urban areas and ought to be housed in 'single quarters' since they had the 'Reserves to go back to'... 'in his country of origin'. Further, they came for wage employment more to satisfy limited cash needs than to make a career (Thornton-White et al., 1948, p. 35).

In discussing the design strategy adopted for residential areas, the authors dismissed the 'gridiron' planning used in historic cities as inappropriate for Nairobi because of its monotony; the 'deadening effect'. They lauded the 'garden city' concept that replaced it as it achieved a desirable 'rural atmosphere' within an urban area. They however felt the 'garden' concept did not deliberately encourage a social atmosphere. To the Africans, the NUC was meant to inject modern values, a 'civilising' effect, and that the labour force needed to be stabilised to remove their migratory proclivity (Nevanlinna, 1996, p. 171). Proposals thus included apartment buildings, a surrounding green area with social and commercial amenities.

The NUC was also rich in emancipatory rhetoric and seemingly was meant to valorise the role of planning in the 'civilising' process. It was held that spatial organisation could hinder or encourage the evolution of a civil and civilised society, and thus they desired to translate the 'values of tribal life into modern term' (Thornton-White et al., 1948, p. 8) through the economic and educational dimension of the NU. Further, a capitalist economic logic of competition built through the NU would spur internalisation of the desire for socio-economic mobility that exceeded the neighbourhood: '... as soon as there are rich and poor, intellectual and low-brow, professionally trained and unskilled, as recognizable types in every race, with interracial organizations, each pressing for bigger slices of the cake, multiracial society is normalized' (Thornton-White et al., 1948, p. 10).

The MP accepted the inevitable reality of the African in the future of the city but also aspired for him to be a 'tinged copy' (Slaughter, 2004) of the Englishman through the NUC strategy. At MP level, it further presumed that the citizens will one day form the key decision-makers in modifying the plan. Thus: 'the Master Plan will be, modified where necessary, be executed when it becomes the plan of the citizen of Nairobi, animated in constructive endeavour to carry it through' (Thornton-White et al., 1948, p. 77). However, in a report on urbanisation by the East African Royal Commission (1955, p. 200), it was argued that lack of indigenous urbanisation made this assertion problematic, and that it was difficult 'to make it possible for them (Africans) to become an element in town life which shares responsibility with the other communities for development of the towns and which also contribute to urban revenues'.

DITs in housing may not have been the framers' idea of modifying the MP, but in the absence of consultative planning, this has ironically become the only avenue of their contribution. Further, despite the emancipatory rhetoric, the NUC was applied only to the Eastlands African district, while other races lived in individualised homes in the unrestricted expansive city sub-urban districts. Emig and Ismail

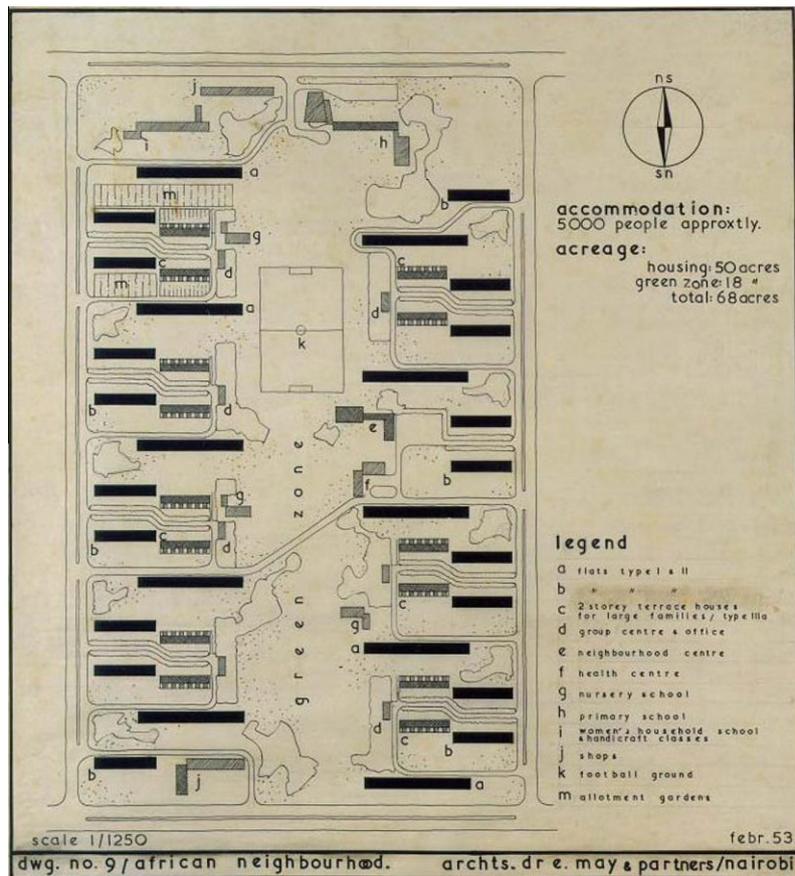


Fig. 10. African neighbourhood proposal layout by May (1953a).

(1980, p. 39) correctly assert that the NUC was hardly an act of benevolence, and indeed some of the neighbourhoods were later barbed-wire fenced for torture and detaining suspects during the Emergency period (1952–1958) proclaimed during Kenya’s liberation struggle.

Ernst May’s ‘African Neighbourhood’

The proposal for an ‘African neighbourhood’ by eminent modernist architect Ernst May (1953a, 1953b) reflects most tenets of the TW Model. His was self-contained with social

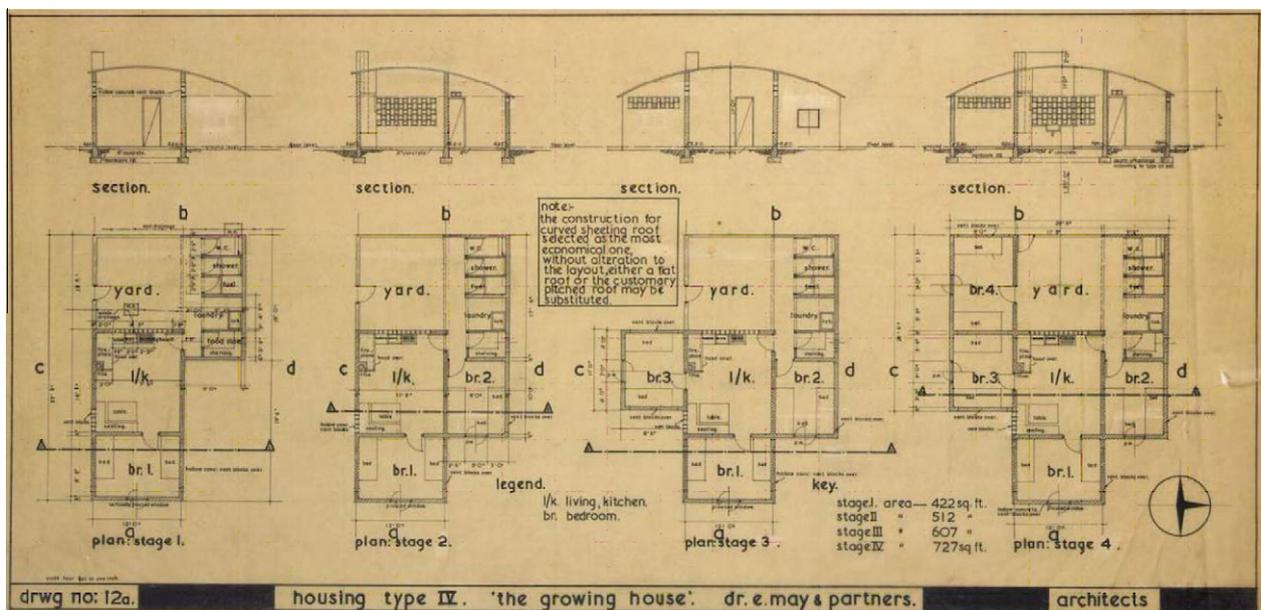


Fig. 11. A ‘growing house’ proposal by May (1953a).



Fig. 12. External view of Delamere Estate block (Makachia, 2010).



Fig. 13. Staircase detail in Delamere Estate (Makachia, 2010).

and commercial amenities and targeted a population of 5000 inhabitants on 68 acres, as described here (Fig. 10).

BOX 2 Ernst May's Delamere Flats

Delamere in Mlimani area is the only estate designed (1938–39) and realised (1947–51) in the city by May. Now a private residential estate inhabited by the middle-income dwellers it was meant for low-cadre European colonial civil servants like “secretaries and clerks” (Dickson, 2010). Other than a few DU owners who still occupy the flats, they are mostly leased as private rental housing. The ownership of the dwellings was facilitated through shares in the development vide a legal contract dated 1948. The location is close to the administrative buildings of the colonial governor, the Anglican Church and City Hall, all relics and manifestations of British imperialism. The site planning is rich in environmental amenities including greenery and open gardens which remain well-manicured, occasionally interspersed with tar-marked circulation roads and parking. Ranging from one to three bedrooms, the DUs have a kitchen, balcony, dining and living rooms and they are linearly arraigned along a gallery. Significantly, other than the re-roofing to accommodate pitched CGI sheeting, little transformation could be observed. Unlike his self-contained African Neighbourhood proposal, this scheme was purely housing lacking social, commercial and community amenities. This scheme answered only to a housing brief and not the “neighbourhood” demonstrated by May (Fig. 10). elsewhere.

A central open space (COS), replete with greenery, and recreational external spaces dominates the proposal. Typical of neighbourhoods elsewhere in the world then and unlike the TW unit, a primary school is included and located at the edge with the shops. Allotment gardens for cultivation are included, reflecting a reference to urban agriculture that still features in contemporary African cities. Arterial roads link the neighbourhood to the rest of the city and thus define its edges. A cluster unit complete with a central access road, a nursery school, an office (‘group centre office’) and two residential typologies are provided. A strong environmental theme is replicated in the clusters as an open plan landscaped with vegetation.

Unlike the TW Model, detailed designs of the DU-types are provided, where the emphasis is on grouped dwellings in vertical low-rise blocks. The DU-types vary in the five options proposed and indicative of May's socio-cultural sensitivity. This was for instance: flexibility providing for large and small African families, bachelor accommodation, and anticipated transformation in a ‘growing house’ type. The transformable ‘growing house’ is akin to later day ‘starter’ unit (Makachia, 1995) and ‘grows’ from about 45 m² to of a twin-roomed DU with an ablution core to a courtyard type unit occupying about 80 m². Roofed with vaulted corrugated sheets for apparent reduction of cost, the roof can be changed to more common pitched or flat type (Fig. 11).

May ‘neighbourhood’ constitutes a direct engagement in African housing and appeared sensitive to their spatial needs. It went beyond the TW Model, with flexibility of household structure and size, growth and hence room for DITs. Unfortunately, no estate was developed analogous to the proposal, and instead a higher income estate target-

Table 1
Colonial housing estates in Nairobi (Shihembetsa, 1995).

Estate	No. of units	Year built	House type	Income group
Bondeni	110	1928	Row housing, single rooms	Low
Kaloleni-(If)	648	1928–1946	1 and 2 storey, 1 and 2 room units	Low
Gorofani	896	1928–1950	Walk-ups, 1 and 2 room units	Low
Landhies Road (Muthurwa)	56	1929	Row housing, single rooms	Low
Shauri-Moyo	1,022	1939–46	Row housing, single rooms	Low
Ziwani	553	1941	Row housing, 2 rooms and kitchen	Low
Starehe-(Bq)	318	1942	Row housing, 2 rooms and kitchen	Low
Jevanjee	80	1945	row housing, 1and 2 room units	Low
Ngara	214	1945–1958	Flats, 1 and 2 bedrooms	Middle
Mbotela	939	1950–1952	Row housing, single rooms	Low
Bahati	1,965	1951	Row housing, single rooms	Low
Ofafa-I	1,324	1953	Row housing, single rooms	Low
Pangani	48	1955	Maisonettes, 3 bedroom units	Middle
Meru Road	6	1956	single houses, 1–3 room units	Middle
Aringo	1,400	1956	1 and 2 storey, 2 rooms, kitchen, wc	Low
Joseph Kangethe	286	1957	Bungalows, 3 and 4 bedrooms	Middle
Embakasi	234	1958	Row housing, 2 rooms, kitchen, wc	Low
Dagoretti	136	1960	single units, 2 bedrooms	Low
Kariobangi North	408	1960	Row housing, 2 rooms, kitchen, wc	Low
Jerusalem	633	1960	1 and 2 storey, 1 and 2 bedrooms	Low
Caledonia Road	2	1960–1961	Bungalows, 4 bedroom + dsq	Middle
Jericho/Lumumba	3004	1961	1 and 2 storey, 1 and 2 bedrooms	Low
Total units	14,282			



Fig. 14. Aerial photograph of Kaloleni Estate. Study clusters and, neighbouring land uses (Makachia, 2010).

ing low-brow European civil servants was realised in Delamere Flats (Box 2, Figs. 12 and 13).

Table 1 shows the estates developed prior to independence utilising strategies discussed in the paper. A total

of 14,157 housing units (Shihembetsa, 1995) were realised between 1928 and 1961. The next section looks at transformations in Kaloleni, an estate reflecting some facets of the TW Model.

The case of Kaloleni Estate

Kaloleni located on the east, about 2 km from the CBD, is now an inner city neighbourhood because of the city's rapid expansion. Constructed between 1945 and 1948 (Hake, 1977, p. 56) through colonial grants, it has remained a CCN rental estate. It borders; to the West, City Stadium; to the East, Makongeni estate; to the North, Jogoo Highway and the Industrial Area to the South (Fig. 14). Kaloleni has been described as a 'model neighbourhood unit' (Hake, 1977, p. 56) and developed to house Africans following the recommendations by the 1942 African Housing Committee, tasked to address African urban housing (Oglivie, 1946). In a manual by Oglivie (1946, p. 16), the municipal engineer, the estate is referred to as located in 'the Makongeni area near the existing African stadium', and Architect Sutton was responsible for the planning and design.

The layout of Kaloleni Estate

In character with the TW Neighbourhood, the abundance of green space and organic layout of the dwelling units, are Kaloleni's best descriptors. However, unlike the NUC's linear, street-based clusters (Fig. 9), clusters based on courtyards, apartment blocks diagonally aligned within open spaces as well as a radial street network best characterise the layout. At the global scale, the estate has two levels of hierarchical open spaces with a Central Open (COS) space serving the entire estate and the smaller cluster-level courtyards. The circulation paths of two types: the concentric ring paths originating from the COS up to the edges, and radial cross-linkages between them.

The COS ('village green' (Oglivie, 1946, p. 18)), which was surrounded by common and communal function buildings, was the visual and functional focus in the layout. The shared functions included commercial, social, administrative as well as recreation.

Two house types used were detached bungalows and walk-up apartment blocks. The courtyards in clusters were organic, lacking the purity of geometry and porously accessed on the edges. Nevertheless, they defined a central focussed nucleic organisation; oriented towards an ablu-tion block. The maximum lengths of the provided courts were 115 m, while the width varied from 20 to 50 m, and these distances also varied within one cluster. This physical formation was expansive and hardly promoted close neighbourliness and territorial control; a factor that guided to the nature of the DITs and appropriation/personalisation of common spaces in the courts.

Genesis of transformations in Kaloleni

Transformations in the estate have occurred in more than one phase, and have not always been initiated by the individuals; others have been officially instigated. Though these sanctioned transformations had objectives of improvement, they have had both positive and negative consequences and rubbished notions of consultation and social inclusivity.

The 1st transformation was aimed at the introduction of in-house piped water and water-borne sanitation that was not provided at inception, as centrally located common ablu-tion (now disused and dilapidated) blocks were, for



Fig. 15. Transformations within a Kaloleni cluster court (Makachia, 2010).

some reason, preferred. In line with prevailing notions/stereotypes towards Africans, it was meant to provide: 'communal sanitary, bathing, clothes- and pot-washing facilities in a central block' (Oglivie, 1946, p. 18). The sanctioned change of in-house water and sanitation was easily due to the revised notions towards the group.

The 2nd physical transformation was gradual, dweller-driven and seemingly by the need for more space. In the early stages, this was hardly noticeable and was internal, qualitative or 'skin'-based transformations only. Later dweller-driven transformations are however notable for their expanse through overt 'additive' transformations (Oxman et al., 1985) of extensions. These quantitative transformation activities coincided with several local, national and global policy orthodoxies.⁹ Equally significantly, it coincided with continued laxity at CCN. Unilateral, as these DITs were, they made overt the legitimate space needs of the dwellers.

The 3rd estate-wide construction activity was the official demolitions of these extensions. In a brief post-election period in 2003 after which a popular government change occurred, there was a national euphoria by which some felt a proper system of managing urban spaces would prevail. As such, the government moved to delete the extension in CCN estates through demolitions. These non-inclusive efforts have become a cropper as presently, a process of reconstruction that defines the estate has prevailed, and forms the template for the present discussion.

Transformation trends in Kaloleni

The transformations here illustrate that housing realised through own initiative serves both enriching and self-defeating ends. These results reflect on the strategic approach manifest in the morphological and functional relationships. It is also a response to the housing consumption model of the rental as opposed to ownership

⁹ These occurred in the 1980s when poverty often instigated by Structural Adjustment Programmes favoured by multi-lateral donor agencies like the World Bank and International Monetary Fund. These included loss of public sector jobs and high inflation due to liberalisation of prices, amongst other measures. As a result, most Nairobi-ans opted for income-generative activities within dwellings/neighbourhoods, and extensions were common spaces for such activities.

model. The architectural strategy aimed to create neighbourhood unit through appropriate grouping in the Urban Design Elements (UDEs) of bungalow clusters and apartment blocks.

In Kaloleni, transformations are manifest as mainly additive and ‘temporary’ rooms (from *mabati* on timber frames) attached to the existing masonry constructions. Originally erected on individually undifferentiated land parcelling, transformations introduced ‘virtual’ and physically defined boundaries linked to the original DU in the bungalows (Figs. 16–18). On the other the apartment blocks were averse to additive DITs ostensibly for reasons of the technological challenges and the more prohibitive costs.

The uses the extensions were subject to included: 1st the economic; subletting for income, and 2nd; the social, to accommodate gender-and age-based cultural differentiation, and 3rd; the physical to accommodate the real, normally larger households. Therefore rationale of the NUC: including the morphological strategy ingrained in the environmental stance; the economic strategy of self-sufficiency and the rental strategy shaped the transformations. This was manifest at the three hierarchical scale levels (i.e. the estate, UDE and the DUs). In this summary, these physical, social, and economic justifications and manifestations of transformations are related.

Fig. 15 is an aerial photograph of a typical Kaloleni cluster showing the changes: with lighter coloured roofs on the

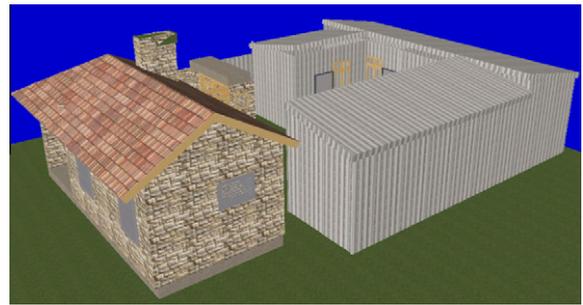


Fig. 17. CAD projection of the transformed DU in Kaloleni (Makachia, 2010).

DITs. These are reflections of *mabati* roofing, which typifies the ‘temporary’ extensions used. Further, each individual DU attracts a new grouping spatial entity of these extensions creating a locus on the original type, also detailed in Figs. 16–18. This detail is elaborated through CAD illustration of one extended DU showing the new ‘mini-court’ creation.

Motivated by the economic gain and encapsulated in physical form, transformations were a choice by the dweller not necessarily reflecting the inter-personal and social relations that guided them but through passive peer influences. Thus, the apparent unity of purpose at the estate was not because of any communal action, but as result of their common challenges of poverty and the functional deficien-

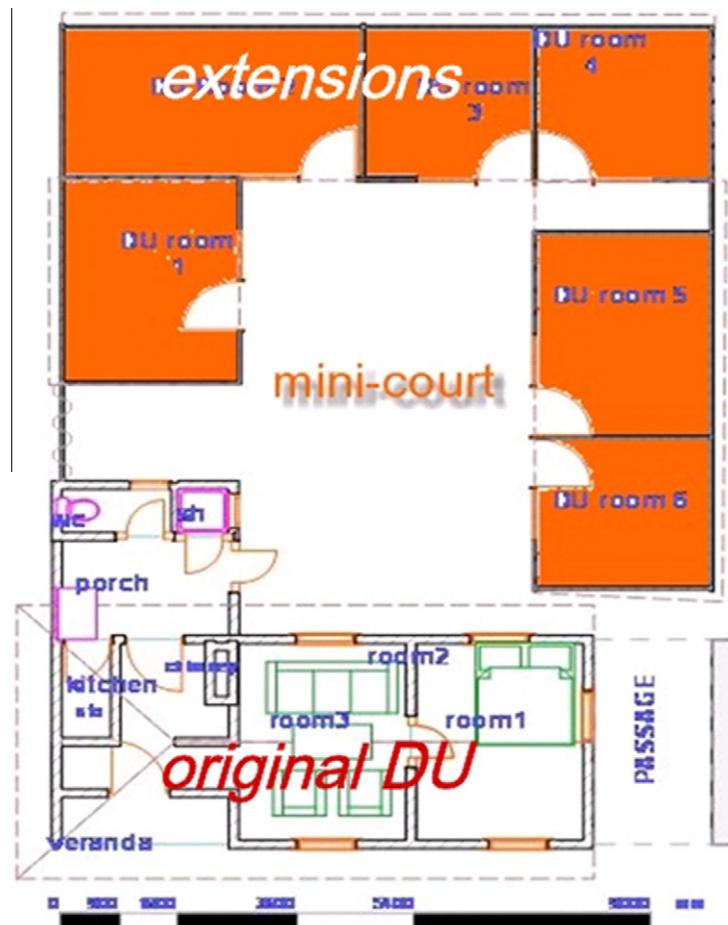


Fig. 16. Layout plan of original DU and transformations creating a ‘mini-court’ in Kaloleni (Makachia, 2010).



Fig. 18. View into 'mini-court' in Kaloleni (Makachia, 2010).

cies of the house provided. Indeed, the fragmented transformations were however responsive in a similar fashion to the lack of security of tenure, the low-income profile of the dwellers, paucity of the physical spaces provided and their unresponsiveness to the acceptable social spatial practice of the provided DU.

The lack of social inclusiveness in design and planning was also manifest in the common trend to create a new socio-physical entity of the 'mini-clusters' personalised at the DU scale, in the process contradicting the provided larger cluster court (Figs. 15–18). Thus, the findings show a breakdown of cluster-level community action and the emergence of a newer entity around the unit, territoriality controlled by the 'core' CCN tenant. In essence, the social dimension was due to the physical limitations and opportunities of the provided ill-defined 'site' and 'space-plan' (Brand, 1994) within the cluster court and unrealised community.

The economic aspect of the social housing estate is rooted in the fact that the DUs had subsidised rent charged by CCN, which made them attractive for the low-income and less so to the more affluent for class differentiation reasons. However, the prime location of the estate, in close proximity to the Industrial Area and the CBD enhanced their economic value. These factors combined to make the CCN tenants reluctant to surrender their tenancies and most 'transferred' tenancy contracts within the family, often generationally in some form of inheritance or horizontally, to siblings. Other 'sold' these contracts through exchange of a financial consideration. For these households, transformations were not only the only option within the socio-economic parameters, but also a chance to overtly express their spatial preference. Sub-tenancies within the extensions were also the norm.

Sub-tenant arrangements in rental housing have earlier been reported from Kenya (Andreasen, 1987), but in Kaloleni it was mainly realised in the DITs. The lack of tenure security in the rental arrangement meant the added units were of low value due the threat of evictions/demolitions. The invidious position of legitimate spatial demands of socio-economic household needs was thus weighed against the legal restrictions of rental tenure. The resultant structures of low physical quality were a direct consequence of this ambivalent and bi-polar positions of legitimacy and legality.

Estate-wide, the three founding physical parameters were significant, i.e. (1) the centrally located common commercial, social, community and recreational spaces, (2) the radial estate street organisation with the ring roads, and (3) the unit grouping and clusters, and each had differing contributions to DITs' propensity. Whereas the first two elements did not seem to catalyse transformations overtly, the latter did. This was manifest in the un-individuated 'plot-less' planning of the DUs.

Some transformations occurred in direct contradiction to the estate global physical formations in the first two physical factors. For instance, transformations promoted informal trade located away from the COS Commercial Centre, a fact that nullified any possible gravitation to the centre, and instead decentralised trade activities. Trade was thus informally dotted across the scheme that emerged along the circulation arteries and spontaneous nodes. The non-hierarchical radial street formation seemed to promote the locational spontaneity of these commercial activities. These concentrations were thus a negation of the strategy of focussing trade at the COS in line with the NUC frame. The central formal market at the COS therefore remained dormant and with low activity as opposed to the thriving spontaneous informality in the streets and the edges.

The clusters were however, the main focus of DITs, albeit again in direct contradiction to the provided. The formation of 'mini-clusters' using the provided unit as the locus created appropriately scaled clusters that also established individual territorial control. They thus unilaterally established a 'plot' formation that was otherwise absent in the original. This however was dampened by the illegality of the act of transformations in the rental ownership strategy, which forced the dwellers to define these spaces using temporal materials. The prevalence of the phenomenon confirmed that the need and urge to extent the units was legitimate and needed to be mainstreamed using appropriate legal instruments.

The physical space occasioned by the porous cluster in the 'plot-less' formation, was the catalyst to the transformations. Literally replicated throughout the estate clusters, the nature of the DITs was a re-affirmation of a priori position that physical space determined the DITs' type, and thus, the thesis is that availability of ground space adjacent to the provided DU or UDE was an impetus for DITs. This is a position theoretically replicated in the apartment typology where minimal transformation activity occurred because of the vertical UDE typology that distanced the dweller to the 'site'. Whichever the case, the lack of consultation of the physical type and articulation was socially exclusionary and negatively influenced the DITs'-nature.

Conclusions and recommendations

The early housing strategies for Africans in Nairobi were based on the position that the community lacked an urban culture and deserved space and qualities different (and inferior) to other urban dwellers. This may have had a basis at the time since traditional spatial perception was rooted in the dispersed rural consumptive values. The present-day housing estate dwellers have through history and continued urban habitation; however, have assumed different values to demand contemporary spatial aspirations. Trans-

formations are an overt expression of these aspirations and therefore need to be recognised for their qualities in shaping urban space.

The study has demonstrated the inevitability of the cultural and utilitarian phenomena of transformations and highlighted that they reflect social, economic and physical spatial objectives of the dwellers. They should be understood so that they form the basis for any interventions for urban renewal and upgrading of housing. This is recognition that the dwellers have developed urban spatial values that ought to be used in new urban standards. Indeed, the new neighbourhoods ought to take cognisance of the cultural (social) and utilitarian (economic and physical) demands of the present-day city family.

These efforts will however be of little value if the tenurial status is not addressed. The continued ownership of the Eastlands housing estates by the City Council of Nairobi is the single deterrent to quality transformations and thus contributes only to the deteriorating physical environments. The individual aspiration to establish territory is a prerequisite to home-formation in Eastlands (as shown in Kaloleni Estate), and therefore empowerment of the dwellers through enhanced rights to the units will improve the physical quality of the provided as well as the added spaces in the neighbourhoods.

Conferment of security of tenure in these environments is however not through freehold or long leases; as such a strategy has never yielded positive results for dwellers in low-income settlements in Kenya. Indeed, such documentation often only leads to transfers to speculators (Kiamba, 1992; Syagga, 2003), especially where prime land is involved as is the case in Eastlands. Indeed, this is already informally happening but since it is without guarantees, the physical quality suffers; leading to slum environments in formal estates (UN-HABITAT, 2008, 2010). A recommended tenure option would confer legality to transformations, within the CCN rental tenure system, and within a legal physical framework. Such security would facilitate transfers with economic returns for transformers, as well as legalise sub-tenancy. The advocacy is for recognition of the physical and functional changes by the dwellers and that such investments will be safeguarded by the CCN.

Within the present urban spatial paradigm, the task is to understand desirable physical spatial qualities and magnitude the low-income dwellers of the city deserve. Studies in DITs form a strong basis revisiting standards based on actual empirical utilisation standards. This aims to establish the legitimate physical needs, which are culturally driven, with the objective of legalisation through appropriate development codes and guidelines.

A recommended model for intervention in the rapidly dilapidating Eastlands is proposed, and it recommends an approach that recognises the present dwellership and their spatial aspirations demonstrated in the DITs. Through formation of Residents Associations (RAs), defined physically using existing architectural spatial templates (specific to the housing estate layout), dwellers would engage in the consultative transformation process. The RAs will thus have roles of mobilising and engaging tenants in a participative approach ('sweat equity' (Hall, 1990)) to densification of the estates. This recommendation aims to establish an Organised Self-Help Housing (OSHH)

(Makachia, 2005a; Rodriguez & Astrand, 1996) densification entity drawn from the dwellership.

The RA is a neighbourhood-based democratic managed entity, which would be tasked to indentify genuine: dwellership of existing neighbourhoods, including household sizes and relationships, household spatial requirements, and existing skills' pool that can be utilised in the transformation interventions. This RA entity will neither subvert nor replace the CCN. The CCN will have specific tasks including to: provide the enabling environment through legislation and facilitation, undertake surveys to establish cadastral survey information of the estates, address issues of infrastructure and other services and provide records of tenancies. This is largely a facilitative role.

Professionals in planning, engineering and architectural bodies will also play a role. They will: undertake technical development proposals, develop phasing programmes for implementation and oversee the implementation (Napier, 1994). This will mainly aim for ensuring quality through technical guidance and information. In line with this role professional would offer DIT Manuals for the dwellers (Owusu & Tipple, 1995; Tipple, 1991, 2000).

Funding bodies including banks, micro-finance enterprises (SMEs) and social groupings for micro-loans will: finance the trunk infrastructure provision, provide individual loans for self-help development, and offer innovative finance instruments for the development (e.g. De Troyer & Allacker, 2004; Makachia et al., 2005c; Stein & Castillo, 2003) and others like insurance covers. Other bodies that feature in the model are NGOs, CBOs and FBOs that will: supplement capacity building sessions to dwellers (because of their grassroots' involvement), facilitate links for networking, disseminate information of innovative management systems, technologies, and help source seed micro-finance from SME(s).

Acknowledgements

The empirical part of the work was generated from doctoral thesis at the University of Nairobi in 2010 that was partially supported through the Deans Committee funding and Higher Education Loans Board (HELB). The French Research Institute for Africa (IFRA) in Nairobi and CORUS supported through fieldwork and workshops on comparative research in governing East African cities that also partially informed the work.

References

- Andersen, K. B. (1977). *African traditional architecture – A study of the housing and settlement patterns of rural Kenya*. London: Oxford University Press.
- Anderson, D. (2002). Corruption at City Hall: African housing and urban development in colonial Nairobi. In A. Burton (Ed.), *Urban experience in eastern Africa – c. 1750–2000* (pp. 138–154). Nairobi: British Institute in East Africa.
- Andreasen, J. (1987). *Rented rooms and rural relations: Housing in Thika, Kenya 1969–1985*. Copenhagen: Royal Academy of Fine Arts.
- Anyamba, T. J. (2011). Informal urbanism in Nairobi. *Built environment*, 37(1), 57–77.
- Anyamba, T. J., & Adebayo, A. A. (1994). *Traditional architecture – Settlement, evolution & built form*. Nairobi: Jomo Kenyatta Foundation.
- Brand, S. (1994). *How buildings learn – What happens after they are built*. London: Penguin Books.
- Bujra, J. M. (1975). *Women 'Entrepreneurs' of early Nairobi*. Retrieved August 8, 2011, from JSTOR: <<http://www.jstor.org/page/infor/stable/terms.jsp>>.

- Burgess, R. (1982). Dweller-initiated advocacy: A curious form of advocacy. A critique of the work of John F. C. Turner. In P. Ward (Ed.), *Self-housing: A critique*. London: Mansell.
- Burton, A. (2002). Urbanisation in East Africa: An historical overview, c. 1750–2000. In A. Burton (Ed.), *Azania: Urban experience in Eastern Africa* (Vol. XXXVI–XXXVII).
- Cheng, L.-C., & Yang, Y.-S. (2010). Homeless problems in Taiwan: Looking beyond legality toward social issues. *City, Culture and Society*, 1, 165–173.
- Churchill, W. (1908). *My African journey*. London.
- De Troyer, F., & Allacker, K. (2004). Modelling of financing mechanisms for incremental urban projects. In *International workshop: Training module rational design and construction-region East Africa*, 14 March 2004–18 March 2004, KU Leuven/UCLAS, Leuven.
- Dickson, J. (2010). Delamere flats (P. Makachia, Interviewer). Nairobi.
- East Africa Royal Commission. (1955). *East Africa Royal Commission 1953–1955 Report*. London: Her Majesty Stationery Office.
- Elleh, N. (1997). *African Architecture - Evolution and Transformation*. London: McGraw-Hill.
- Emig, S., & Ismail, Z. (1980). *Notes on the Urban Planning of Nairobi*. Copenhagen: Royal Academy of Fine Arts, School of Architecture.
- Frampton, K. (1992). *Modern architecture - A critical history*. London: Thames Hudson.
- Groat, L., & Wang, D. (2002). *Architectural research methods*. New York: John Wiley & Sons.
- Hake, A. (1977). *African metropolis*. London: Sussex University Press.
- Hall, P. (1990). *Cities of tomorrow - An intellectual history of planning and design in the twentieth century*. Oxford: Basil Blackwell.
- Hamdi, N. (1991). *Housing without houses - Participation, flexibility, enablement*. London: Intermediate Technology Publication.
- Hansen, K. T., & Vaa, M. (2004). *Reconsidering informality - Perspectives from urban Africa*. Uppsala, Spain: Nordiska Afrikainstitutet, NAI.
- Hirst, T., & Lamba, D. (1994). *The struggle for Nairobi - the story of an urban environment, built at the place of 'cold waters', retold in words and pictures*. Nairobi: Mazingira Institute.
- Kiamba, M. (1992). Regeneration of low-income houses and squatter settlement areas in Nairobi, Kenya. In L. Kilmartin & H. Singh (Eds.), *Housing in the third world: Analysis and solutions* (pp. 231–250). New Delhi: Concept.
- Kim, S.-H. (2010). Issues of squatters and eviction in Seoul: From the perspectives of the dual roles of the state. *City, Culture and Society*, 1, 135–143.
- Makachia, P. A. (1995). *Starter unit concept - Case-study analysis of NHC of Kenya low income housing projects*. MArch Thesis, PGCHS, KU Leuven, Leuven.
- Makachia, P. A. (2005). *A Manual for Organized Self-Help Housing Densification in Eastlands, Nairobi*. Organised Self-Help Housing Planning and Management-Costa Rica 2005. CD-ROM. Lund, Sweden: Housing Development Management (HDM), Lund University/Sida/FUPROVI/PROMESHA.
- Makachia, P. A. (2010). *Transformation of housing in Nairobi - Dweller-initiated transformations in formal housing in Nairobi estates with case studies of Kaloleni and Buru-Buru Estates*. PhD Thesis, University of Nairobi, Architecture and Building Science, Nairobi.
- Makachia, P. A., Talukhaba, A. A., & Omenya, A. O. (2005). A cost modelling design strategy for dweller-initiated transformations in urban housing. In A. A. Talukhaba, O. A. Akindele, & J. Appiah-Baiden (Eds.), *Proceedings of the 3rd post-graduate conference of Construction Industry Development (CIDB) - 2005* (pp. 373–388). Johannesburg: CIDB/University of Witwatersrand/COEGA.
- Malombe, J. (1996). Women's Groups and Shelter Improvement in Kenya. In A. Schlyter (Ed.), *A place to live - Gender research on housing in Africa*. Uppsala: Nordic Africa Institute.
- Mann, E. (1968). Nairobi - From colonial to national capital. In H. Berger (Ed.), *East African studies (ostafrikanische studien)* (Vol. 8, pp. 141–156). Nurnberg: Nurnberger Wirtschafts- und Sozialgeographische Arbeiten.
- May, E. (1953a, February). Retrieved May 20, 2011, from <<http://planum.net/archive/may-hou-0-2,d1-d6.htm>>.
- May, E. (1953b). Bauen in Ostafrika. *BAUWELT 1953 HEFF*, pp. 104–111.
- McVicar, K. (1968). Pumwani - The role of a slum community in providing a catalyst for culture change in East Africa. In H. Berger (Ed.), *East African studies (ostafrikanische studien)* (pp. 157–166). Nurnberg: Nurnberger Wirtschafts- und Sozialgeographische Arbeiten.
- Mitchell, T. (1988). *Colonising Egypt*. Cambridge: Cambridge University Press.
- Mizuuchi, T. (2010). Editorial - Editorial note on the special issue on "Housing poverty, homelessness". *City, Culture and Society*, 1, 109–110.
- Myers, G. A. (2003). *Verandahs of power - Colonialism and space in urban Africa*. New York: Syracuse University Press.
- Napier, M. (1994). *Capturing transformations of place: The adaptation of a geographic information systems program for the creation and analysis of a large database of houseplans*. Newcastle: Centre for Architectural Research and Development Overseas (CARDO), University of Newcastle upon Tyne.
- Nevanlinna, A. K. (1996). *Interpreting Nairobi - The cultural study of built forms*. Helsinki: Bibliotheca Historica 18 - Suomen Historiallinen Seura.
- Nguluma, H. (2003). *Housing themselves - Transformation, modernisation and spatial qualities in informal settlements in Dar Es Salaam, Tanzania*. Stockholm: Department of Infrastructure, Royal Institute of Technology.
- Oglivie, G. C. (1946). *The housing of Africans in the urban areas of Kenya*. Nairobi: The Kenya Information Office.
- Ogura, N. (2005). Ernst may and modern architecture in East Africa. In *ArchiAfrika conference proceedings: Modern architecture in East Africa around independence, Dar es Salaam, Tanzania, July 27–29, 2005* (pp. 81–88). Utrecht: ArchiAfrika.
- Owusu, S. E., & Tipple, A. G. (1995). *The process of extensions in Kumasi, Ghana*. Newcastle upon Tyne: CARDO.
- Oxman, R., Herbert, G., & Wachman, A. (1985). Strategies for growth and staged building in housing. *Habitat International*, 9(1), 25–31.
- Panerai, P., Castex, J., & Depaule, J.-C. (2004). *Urban forms - The death and life of the urban block*. Oxford: Architectural Press.
- Perry, C. A. (1929). The neighbourhood unit. In *Regional survey of New York and its environs* (Vol. VII). New York, NY: Regional Plan for New York.
- Rodriguez, M., & Astrand, J. (1996). Organised small-scale self-help housing. *Building Issues*, 8 (4).
- Sasaki, M. (2010). Editorial - City, Culture and Society (CCS) - Opening up new horizon of urban studies. *City, Culture and Society*, 1, 1–2.
- Shihembetsa, L. U. (1995). *User needs in urban low-income housing: Towards a framework for creating user responsive environments in Nairobi, Kenya*. PhD Thesis, CARDO, University Of Newcastle Upon Tyne, Newcastle Upon Tyne.
- Slaughter, J. (2004). Master Plans: Designing (National) Allegories of Urban Space and Metropolitan Subjects for Postcolonial Kenya. *Research in African Literatures*, 35 (1).
- Stein, A., & Castillo, L. (2003). Innovative financing for low-income housing - lessons from Central America. *Building Issues*, 13(1).
- Stren, R. E. (1978). *Housing the urban poor in Africa: Policy, politics and bureaucracy in Mombasa*. Berkeley: Institute of International Studies, University of California.
- Syagga, P. (2003). *Integrated, multi-sectoral and sectoral urban development initiatives in Kenya*. Rugby, UK: ITDG, DFID.
- Taylor, W. (2005). Communities and communication in Nairobi. In E. Riley & P. Wakely (Eds.), *Communities and communication - Building urban partnerships* (pp. 64–84). Rugby, UK: ITDG & DFID.
- Thornton-White, L. W., Anderson, P. R., & Silverman, L. (1948). *Nairobi - Master plan for a colonial capital - A report prepared for the Municipal Council of Nairobi*. London: His Majesty's Stationery Office.
- Tipple, A. (1991). *Self-help transformations of low cost housing: An introductory study*. Newcastle upon Tyne: CARDO.
- Tipple, A. (2000). *Housing themselves - User-initiated transformation of government-built housing in developing counties*. Liverpool: Liverpool University Press.
- Turner, J. F. (1977). *Housing by the people - Towards autonomy in building environments*. New York: Pantheon.
- Tzonis, A. (1976). In the name of the people - The development of contemporary populist movement in architecture. *Forum*, XXV(3), 5–9, 27–33.
- UN-HABITAT/ECA-CEA/UNEP/IDRC-CRDI (2008). *The state of African cities 2008 - A framework for addressing urban challenges in Africa*. Nairobi: UN-HABITAT.
- UN-HABITAT/UNEP (2010). *The state of African cities 2010 - Governance, inequality and urban land markets*. Nairobi: UN-HABITAT.
- Yin, R. K. (2003). *Case study - Design and research methods*. London: Sage Publications.
- Zeisel, J. (2006). *Inquiry by design: Tools for environmental behaviour research* (revised ed.). Monterey: Brooks/Cole Publishing Company.

Local words, Acronyms and Abbreviations

- CBD: Central Business District
 CBO(s): Community-Based Organisation(s)
 CCN: City Council of Nairobi
 CGI: corrugated galvanised iron
 COS: central open space
 Debe(s): Swahili language for tin-can(s)
 DIT(s): Dweller-Initiated transformation (s)
 DU(s): dwelling unit(s)
 FBO(s): Faith-Based Organisation(s)
 Mabati: Swahili language, corrugated galvanised iron sheets, also CGI
 Matatu: slang for privately managed public transport minibuses in Kenya
 MP: 1948 Master Plan for Nairobi
 NGO(s): Non-Governmental Organisation(s)
 NU(C): Neighbourhood Unit (Concept)
 OSHH: Organised Self-Help Housing
 PC: Plot Coverage
 RA(s): Residents' Association(s)
 S&S: Site and Service
 SME(s): Small and Medium-scale Enterprise(s)
 TW: Thornton-White
 UDE: Urban Design Grouping Element