Perspectives on City Planning of Post Independence Kampala: The Emergence of the Metropolitan Growth Model and the Hexagonal Cell

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ABSTRACT
The United Nations experts invited to plan Kampala-Mengo Region in 1963 had noted that past development in Uganda provided little knowledge and guidance and therefore no comparative models were available, but contact with developed countries, would offer solutions to the various urban and peri-urban problems that had emerged. In that era of modernist planning, dealing with city regions was popular and various ideas and models to deal with urban growth were formulated. Through a descriptive and exploratory approach, this paper attempts to discuss how metropolitan area growth model and the hexagonal city form that emerged in the early twentieth century and after World War II served as the dominant scholarly and professional response to the development problematic in the metropolitan Kampala. The empirical findings reveal that models generated were aimed at keeping down the total cost of urbanization by concentrating developments in new cities surrounding a major urban centre. The growth model was linear and open-ended, and capable of accommodating a continuously increasing population, an expanding economy and a rapidly changing technology. The Hexagonal cell form was proposed for the new towns, to be limited by maximum acceptable walking distance of approximately two-thirds of a mile to the centre, school and public transport. Despite all the effort put into planning, all idealized geometrical schemes and plans remained on paper and Metropolitan Kampala continued to grow and expand on adhoc basis, a trend similar to or even worse before the involvement of the United Nations team.

Keywords: Hexagonal cell, Kampala-Mengo, Metropolitan area, Metropolitan growth model,

1.0 INTRODUCTION

The immediate effect of Uganda's independence in 1962 was increase in urbanization that showed a remarkable spurt of growth in Kampala city itself and all major towns neighbouring the city. The gradual transfer of government ministries and departments from Entebbe (once administrative capital) that started in the 1950's was accelerated when Kampala was granted City status from Municipality, and became the official Capital of Uganda in 1962. The National Parliament was established there. With Independence foreign missions arrived. The Treaty for East African Cooperation led to the establishment of the headquarters of the East African Posts and Telecommunications Corporation and the East African Development Bank in Kampala. More importantly, the operations of the corporations administered by the Community, that is, railways, harbours, posts and telecommunications, airways, and certain services, all had their offices in the new administrative and commercial capital of Kampala (Gugler, 1968:17). Described as the expatriate headquarters, many Africans from beyond the borders of *Buganda* Kingdom, and many from neighbouring Kenya, came in search for opportunities and settled both in the national capital, in domestic quarters and in the housing estates; and in the periphery of the City, within Mengo area. Already the densest African settlement was in Mengo, the capital of Buganda that had the greatest degree of urban development than any indigenous centre in Eastern and Southern Africa (Southall, 1968). The substantial increase in the labour supply that was attracted to Kampala by wage employment

brought population to well over 50,000 people within the city and over 150,000 in the city and the new Mengo municipality. The need for housing and services was already tremendous. Worse still unplanned high-density quarters had sprung up in the swamps and low lying areas between the many hills and in several peri-urban areas, where the masses of unskilled, uneducated, poorly paid migrants built crude houses or thatched units, "getting practically nothing in the way of increased material amenities such as roads, power and light, water, drainage, sanitation, religious and educational services or police protection" (Southall, 1968; Hance, 1970). The Greater Kampala Area was composed of Kampala City, Capital of Uganda; Mengo Municipality, Capital of the Kingdom of Buganda; Kawempe Town, Nakawa Township, and the urban parts of Kyadondo County, all under Mengo Government. The governing authorities over the different parts were different and divided. Their powers were not the same, and the development standards and regulations varied from high in Kampala city to practically nil in the county. These divisions in themselves complicated the problems of the whole area. Crime was committed without respect to the civic boundaries; policing was divided. The variation in industrial development, commerce, and housing meant that some authorities had much more resources than others. While the problems called for a more unified approach, the divisions made that impossible (Scaff, 1964:1-7). This was the situation in 1963 which led to a request for a United Nations Urban Planning Mission to Uganda, by the Government of Uganda, seeking direction and assistance in solving its most difficult urban problem – the planning and development of Greater Kampala Area.

2.0 METHODOLOGY

This paper is part of an on-going PhD research by Fredrick Omolo-Okalebo, on the *Evolution of Physical Planning of Kampala City: A Study of Planning Ideas and their Implementation 1903-2004*. A qualitative inquiry approach was employed, involving the studied use and collection of a variety of empirical materials from case study, and through documentary and archival resources. The methodological process involved the gathering of significant historical data and facts about major events, the organization of these facts into a chronological sequence, and the meaningful interpretation of the patterns of rationality through – historical, case study, introspective, oral interview, observational, interactional, and visual texts that described the physical planning moments and outcomes in Kampala in the immediate post independence epoch.

3.0 FINDINGS

The beginning of post-independence era saw significant changes in government's attitude towards urban planning and towards the task of master planning for Kampala in particular following upon the government's representation at *Conference on Urbanization Problems in Africa* held in Addis Ababa in 1962 (Hather, 1969). After this conference, an urban planning team was recruited through the United Nations to produce a master plan for Mengo. The team was accordingly designated – "The Kampala Mengo Urban Planning Mission". This team noted that the timeframe and the resources available for the task were too limited to produce a master plan for Kampala, but went ahead to carry out a study and give recommendations. Following the first UN Mission's recommendations to the Uganda Government, and the Government's recognition in 1964, that issues affecting Kampala and the hinterland were of Regional nature and required well thought policies, led to a request for continued UN assistance to deal with the identified regional problems and to prepare master plans for the Greater Kampala Area. This support was granted through the Africa Development Bank and the World Bank. Interviews with Lars Danielson and Reidar Persson, former Architect-Planners with the second and third UN Missions, respectively, reveals that the United Nations requested Sweden to send a diverse team of junior planning professionals (ages of 27-35years – that comprised; two Physical Planners, two Architects and two Statisticians) to Kampala to continue through the two years from 1964-1966 the work initiated by the first UN Urban Mission in 1963, its frame of reference however being expanded to the 'Concept of Metropolitan Region', and extending its long range projections up to the year 2000. The second team of Swedish Nationals was led by an Englishman – Mr. Sydney Litherland who

arrived in Kampala in September 1964 (United Nations, 1966). Towards the last quarter of 1964, the name of physical planning organization of Uganda Government was changed from Department of Town Planning to Department of Town and Regional Planning. This was to mark a significant change in the approach to physical planning and for the first time planning on a regional scale was envisaged (Winblad, 1966). The United Nations Regional Planning Mission (UNRPM) together with newly recruited six Ugandan staff from the Department of Town and Regional Planning in Kampala, undertook several studies code named Kampala-Mengo Regional Planning Studies with emphasis on urban growth trends (including population growth and projections to the year 2000); basic structure for the extended Metropolitan Area; industrial location; residential housing; transportation; and physical planning legislations (Safier and Langlands, 1969); as background investigation for the production of an appropriate physical model for the Greater Kampala Area, a physical plan for the expansion of the central business district, and a physical plan for residential areas and housing typologies to be built therein. From the concluded studies, the Mission presented reports to the Ugandan Ministry of Regional Administrations embodying their findings, as follows: The Metropolitan Area of Kampala comprised of four separate local government authorities: Kampala City, Mengo Municipality, Nakawa Township and Kawempe Town Board. The first one was controlled by Uganda Government, and the other three by the Kingdom of Buganda Government. These were all different types of local authorities, and at different stages of development. The problem lay in the coordination of the different authorities, which proved difficult, yet co-operation was moreover lacking between the different authorities. The assumption was that this model that combined an agglomeration – the contiguous built-up area with peripheral zones not themselves necessarily urban in character, or a large metropolis and its adjacent zone of influence would improve coordination and management of the urban activities, provision of infrastructure and services, and the development of transportation routes and physical growth of Kampala-Mengo region.The second assumption was that Kampala-Mengo would be given every possibility to develop the advantages of a large metropolitan area: a varied job market, specialized services, first class cultural and educational institutions and a wide choice of recreational activities. The third assumption was that the population of Uganda would continue to grow at a rate of 2 ½ -3 percent per annum up to the end of the century and that an increasing portion of this population would leave in the urban areas (Litherland, 1966).

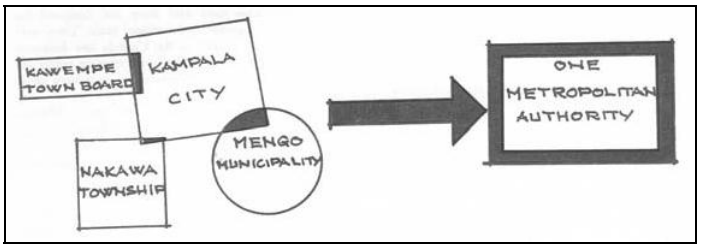

Figure 1: Proposed Conceptual Model for Directing Growth of Greater Kampala. (Source: Litherland, *et al,* 1966)

Population pressure on existing housing stock: It had been forecast that for several decades to come, the metropolitan population of Kampala-Mengo would continue to grow at a rate of between 5.2 and 6.4 per cent per year. This meant that the estimated population of 180,000 at the time would increase to some 500,000 people by early, 1980 and to about 1,500,000 by the end of 2000, and this would have a devastating impact on the city's housing stock. The situation was immense that fourteen thousand more housing was needed for greater Kampala alone in the next five years (Litherland, 1966). The Central Business District (CBD) was expanding at a rapid rate, by 1964 it was 0.68 of a square mile and projections had intimated that the city would expand to about 2 square miles in extent by 1980, and 8½ square miles, by 2000. Such growth was seen as dynamic and needed nurturing, rather than confine the CBD to any single or final size (Winblad, 1965). The continuous and impressing growth of the

CBD required great planning efforts and firm policy making. In highlighting the problems, the UN Regional Planning team issued the following statement;

> "It is inevitable that considerable expansion must be envisaged. …In a country of rapid population increase still to undergo large-scale urbanisation, it must be expected that the expansion of the National Capital's CBD will occur with certainty. Moreover, in a society of rising prosperity with increasing standards of living, demands occur for even more space for additional activities. The assessment of 'ten times as large' could prove to be a conservative one." (United Nations, 1965)

3.1 The Metropolitan Growth Model

In this era of modernist planning, dealing with city regions was popular and various ideas and models to deal with urban growth were formulated. For example, Eran and Gordon (2000) submit that the onset of World War I in 1914 and the destruction of parts of European cities sent many city reformers to the drawing table. As the city boundaries expanded in an unrestrained fashion, a new apparatus of planning to bridge the gap between the city, the suburbs and the open region was sought. Winblad who was in favour of searching for new approaches to deal with Kampala region said, "the future settlement of Kampala-Mengo must not be a projection of past trends which would only lead to formlessness low density sprawl. The growth should be guided into a predetermined form" (Winblad, 1965) of settlement units providing accommodation for households made up of a balanced cross-section of the community. In his report to the Government of Uganda Winblad echoed the lack of comparative models for Kampala's planning, stating that, "Physical planning in the already urbanized parts of the world is mainly concerned with reshaping worn out and obsolete cities, most of which were large in area and population before they felt the full impact of modern technology – there the scale of development will for a long time impede any radical change. In Uganda most of the urban expansion is still to come. The pattern is not set and many alternatives are available. Uganda can now profit from the accumulated experiences and advanced techniques of developed countries and avoid their mistakes by planning for continuing, dynamic growth. With farsighted planning, adequate tools and methods for implementation, it will be possible to avoid inefficiency and formlessness….." (Winblad, 1966:1-2). As in Sweden, the main idea in the planning of Kampala was to integrate city development and rapid population growth. The question was how should it be built? Sweden had belief that to build the social state, everything could be planned in relation to human needs; transportation, security, and so on. Vallingby, the huge Stockholm suburb that had been built based on the popular Clarence Stein's and Henry Wright's *Radburn* and Clarence Perry's Neighbourhood unit ideas, combined with Raymond Unwin's and Barry Parker's cul-de-sac method of residential layout for houses combined in blocks was a symbol of planned community and this, was seen as great model for Kampala.

3.2 Model Conceptualization and Contextualization

The UN Regional Planning Mission, observed and recommended that population and development in and around Kampala region was concentrated to a wide belt along Lake Victoria. Within this belt, the areas suitable for major urban expansion were marked. Winblad (1965) anticipated that the identified areas would contain three to four million people if built up at densities similar to those of British New Towns. (This was said for comparison only – not to be taken as a recommendation). Therefore, the growth model was to be linear and open-ended, and capable of accommodating a continuously increasing population, an expanding economy and a rapidly changing technology. It was to make possible a shift from one mode of public transport to another as development progressed. Costs of roads and public transport, water and sewerage facilities, power and telephone networks, were to be kept at a minimum by concentrating developments.

3.3 The Hexagonal City Form

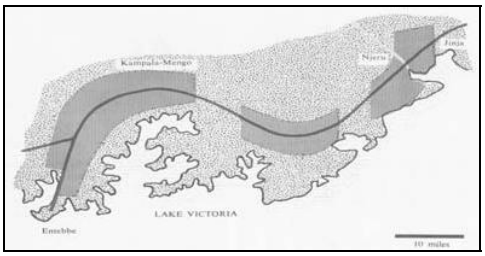

Figure 2: Linear Metropolis Model by the UN Mission (Source: Winblad, 1966).

To implement the Metropolitan Growth model, hexagonal city form was proposed as most optimum way of land usage, that is, when hexagons are put together, they join more perfectly than other shapes, such circle. The cell was to contain a centre with a market, shops and community buildings, a park belt with schools and sports grounds, and an industrial estate with residential areas for 20,000 to 40,000 people depending on density. The size of the cell was limited by maximum acceptable walking distance to the centre, school and public transport; here taken as ⅔ mile or one kilometer. Winblad derived his hexagonal form for Kampala on the assertion that Y-shaped roads are better suited to motor traffic than conventional crossroads. When assessed from sightlines and probable accident-spots perspective, a three-way intersection was theoretically greatly superior to a four-way intersection because the 120° angle has improved sight lines compared with the right angle. The three-legged intersection has only three potential collision points, compared with 16 in the other (Winblad 1966).

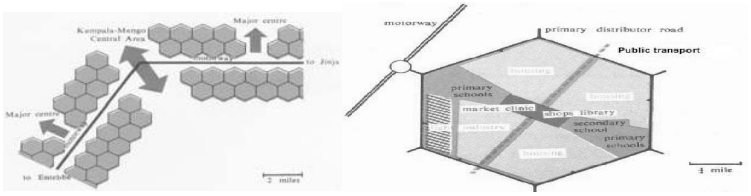

Figure 3: Linear Growth Model around Hexagonal Cell Structure developed for Kampala-Mengo Region. (Source: Winblad, 1966; Litherland, et al, 1966:12)

The other important factor behind the cell pattern was that, it could easily be adapted to the special topography of the southern part of Kampala Region, with low hills rising 200 to 500 feet above valleys covered with papyrus swamps. In line with location suitability of the model on the hills of Kampala-Mengo region, the hill tops were seen to be suitable for agriculture and building development but could be expensive to service. The wet valleys were problem areas but they could undoubtedly in most cases be drained and rendered suitable for some development, in particular for transportation lines, open spaces, playing-fields and industrial buildings."(Litherland, 1966:12)

3.4 Zooming into the Residential Unit: the Hexagonal Cell Tissue

As part of the proposed residential pattern for the Metropolitan Area, a pilot project was earmarked on some 870 acres, situated approximately four and half miles from the centre of Kampala on two hills (Nakulabye and Namirembe), rising 100 ft. and 200 ft. respectively. A plan for a housing project for some 30,000 persons, representing a cross-section of the urban population of Kampala-Mengo was prepared based on the residential unit model. Projected at a population of 30,000 persons the overall density would be 35 persons per acre (Interview with Danielson, May 22nd 2010). The aim of the scheme was to provide housing in a good-living environment at a reasonable cost. This was to be accomplished by using a series of basic techniques; the separation of vehicular and pedestrian movements; the provision of schools and a shopping and community centre within easy walking distance of homes (approximately up to two-thirds of a mile); the provision of ample open space for recreation; the reservation of a route for a possible future rapid public transit system; the provision of an industrial estate giving some work opportunities near the home; the provision for the

development of housing of many types to suit the varying incomes of the people; and orderly planning with the provision of adequate urban infrastructure (Danielson, 1966). The Layout of the proposed unit is hexagonal in form, and is circumscribed by primary roads referred to as primary distributors. The advantage was that the inhabitants would be able to move freely within the area without the necessity of crossing a road. The housing layout was planned around the feeder roads on the slopes of the hills leaving the valleys and hill tops for public parks and open space. To serve the needs of the community, provision was made at the centre for shops, community buildings and a transport terminal. Eight primary schools were distributed throughout the area with provision for extension to secondary level on ultimate development. A light industrial estate on some 50 acres was planned for the south-west part of the area as an adjunct to the main industrial areas". By the provision of basic services and amenities, it was hoped that housing would largely be generated through self-help, and four basic schemes (labelled A-D on figure 4) were proposed; (A) serviced plots for development in traditional and semi-permanent building materials; (B) ⅓ acre serviced plots for high class private development; (C) core-housing; and (D) 3-4 story flats. The major part of the proposed layout was small serviced plots of 35 x 80 feet (minimum) on the periphery, meant for individual family occupancy on single plots. Commercial residential use, that is, lodging houses were meant to occupy over 2-3 plots.

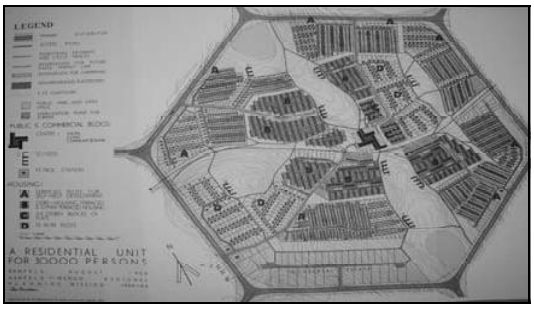

Figure 4: Residential Unit Model for Kampala (Source: Lars Danielson, 1966)

Basic services to be provided were roads, piped water, water-borne sanitation and street lighting.To the UNRPM, the approach to residential development based on the residential unit model proposed would be the model for similar units on all the other hills surrounding the CBD.

3.5 Implementation of the UN Missions Ideas and Models

Despite the hard work from the UNRPM, the scientific analysis and the resources committed to conduct studies and prepare the relevant plans including the vigorous promotion of these plans, not a single hexagon was ever built in Kampala-Mengo region. Plan implementation involves expenditure. Due to lack of resources both human and economic, it was not possible to implement the decisions immediately. Even with resources, the nature and comprehensiveness of the plans would have rendered implementation to be a slowly expanding process taking many years to complete. The object of the 'present' system was the negative one of controlling private initiative and did not provide Government and local authorities with adequate tools for an effective solution to the physical problems facing the metropolitan area". According to UN HABITAT (2007), the Idi Amin military government that took over power in 1971 followed by declaration of economic war in 1972 by the military regime seriously affected the revenues of the city. Property owners, the majority of whom were Asian and Europeans were forced to leave the country and the properties were entrusted to Departed Asians Properties Custodian Board (DAPCB) a parastatal whose ability to maintain and pay property rates for these properties left a lot to be desired. The political state of affairs in Kampala-Mengo was not conducive for plan implementation to take its course. A duality continued to exist between Kampala city and Mengo Municipality, with the latter accusing the Central government of plotting to take over its properties, namely land and reducing the powers of their King. In 1966, there was a turn of events, the first Prime Minister of Uganda, Milton Obote, abolished all kingdoms in the country. The overthrow of the *Kabaka* of Buganda as well as the other monarchies by the Prime Minister led to the incorporation of the *Kibuga* (Buganda capital city) into Kampala with Kampala City Council as the administrative unit and in1968 the size of the city of Kampala increased from 21 sq. km. (8sq. miles) to 195 sq. km. (75 sq. miles) with the inclusion of Kawempe, Lusanja, Kisaasi, Kiwatule, Muyenga, Ggaba and Mulungu. This today forms the physical and administrative jurisdictional area of Kampala, which continued

to grow and expand on adhoc basis.

4.0 CONCLUSION

Planning of Kampala in this modern era was influenced by no single idea, but a combination of ideas and theories dating back to the early twentieth century, and through to the 1950's and to the 1960's. Typical of many early 20th-century planning, the UN Missions scientific approach to planning of Kampala-Mengo settlements was based on the modernist 'conviction that the present problems of cities can be transcended by looking to the future, generally involving an expert led and 'top down' process of producing plans. The idea of the city region influenced planning throughout that period and consisted of a constellation of the larger core city, and decentralized towns ('New Towns') in a particular form and in an integrated pattern. With utopian visions similar to those behind the Garden City, these 'New towns' were seen as ideal and offered a solution to the problems of Kampala-Mengo Region and a model for a new type of urban settlements, which were self-supporting growth points with satisfactory economic, social and cultural facilities. Despite all the effort put into planning, all idealized geometrical schemes and plans remained on paper, except for an experimental cul-de-sac residential layout on Mulago Hill. No single hexagon was built in Kampala-Mengo to date and the Kampala and the surrounding areas continued to grow and expand on ad hoc basis, a trend similar to or even worse before the involvement of the UN team.

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Influence of Solar Shading on Indoor Climate of Buildings

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ABSTRACT
The paper describes and analyses the influence of shading on the indoor climate of Maputo City buildings and its impact on thermal comfort to the occupants. The case study focuses on Maputo City – 3 de Fevereiro Guest House of Eduardo Mondlane University and is one example of how the temperatures within any buildings of Maputo City E-W orientation are influenced by the lack of adequately fixed shading devices. Mozambique is mainly a tropical country that is characterized by a strong solar radiation throughout the year. The elimination or reduction of the incident direct solar radiation on the external walls of the buildings could be a key method of reducing electrical energy consumption and increasing occupant thermal comfort. The main objective of the research was to evaluate the thermal comfort that was lost due to the lack or inadequate shading on buildings and to encourage designers and builders to use passive means to attain better conditions in the buildings. The simulation results showed that by using properly dimensioned external fixed shading devices on E-W orientated buildings in Maputo City, the indoor temperatures and the thermal comfort could improve significantly. The improvement in comfort hours during the hottest day and typical summer days is 33 % and 100 % respectively.

Keywords: Building envelop, Building orientation, Passive cooling, Simulation.

1.0 INTRODUCTION

The strong solar radiation observed in Maputo City-Mozambique from October to March make the indoor temperatures of non shaded buildings become very high and, consequently, such buildings are often not comfortable for occupants for most of the year. Thus, to minimize the negative impact, the occupant uses devices such as fans and air conditioners to get comfort. The rate of energy waste due to inefficient use is indeed significant, hence the amount of money spent for this purpose is enormous both for private and public consumers. Conflicts in terms of non-payment of electricity duty are common. Despite that fact, little work has been done to improve the energy performance in buildings. Solar shading can contribute positively to energy use in buildings by improving the shading coefficients of the envelope. The exterior shading of building is widely used and it is a very effective method to create lower direct solar radiation to the internal. The strategy leads to lower indoor temperature condition and reduced energy use for active cooling (Kolokotsa, 2007). There is a wide range of solar shading components. Most used devices for shading the buildings are; landscape feature; fixed shading devices; horizontal reflecting surfaces; solar control glass and interior glare control devices such as Venetian blinds or adjustable louvers and curtains. External shading is more efficient than internal shading devices which dissipate the heat to the air gap between the shading device and the glazing (Datta, 2001).