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The Historical Path of the Green Landscape of Kinshasa City: Revelation of a Landscape of Conflict

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ABSTRACT

Built on a geomorphological site of an amphitheater form, the strong population growth of Kinshasa city and its spontaneous urbanization causing several mutations of the urban landscape. Socio-spatial transformations induced were accompanied by degradation of the habitat damaging to the sustainable development of the city.

Faced with this emergency of the requalification of the habitat, this study aims to analyze the evolution of green landscape of Kinshasa. So, based on the hypothesis of four steps evolution of green landscape, the present study was carried out through survey and historical documents reading. The survey consisted of unstructured and informal interviews with 100 people over a one-year period. The historical document reading consisted in reviewing the historical and present textual, cartographic and photographic documents about the city vegetation cover. As results, our hypothesis is confirmed and resume the historical path of the green landscape of Kinshasa like following: original green landscape – imported green landscape – mimetic green landscape – unbalanced green landscape. These results reveal a veritable landscape conflict by highlighting the abstraction in the Man-Nature

link. Moreover, it is obvious that the natural environment is highly degraded and remains supported by the few remaining green spaces and agricultural spaces present thanks to the abundant network of hydrography of the city. By re-emerge initial green conditions of the city, this study feeds a reflection of the green landscape characters which were unknown by the new inhabitants. The green landscape change reconstructed through maps and stories offer the way to understand the habitat degradation process and their causes; to restore the environmental balance in order to reduce risks such as gullies based on culture of inhabitants by the co-partnership.

INTRODUCTION

A polynomial and polymorphic city with many names and faces in the heart of the African continent, Kinshasa, is the subject of multiple readings through the eyes of science and various arts. The interest in this city stems from its strong peri-urbanization subsequent to its relatively strong demographic and spatial growth (Pain, 1984; Lelo Nzuzi, 2008; Kayembe Wa Kayembe et al., 2009; SOSAK, 2014). It is also a city where the usual reference systems are scrambled and where everything works differently (De Boeck & Jacquemin, 2006).

The various studies dedicated to the Kinshasa territory reveal the image of an unbridled city with rather heterogeneous patchwork of an urban landscape. Built on a large amphitheater-shaped site, Kinshasa is comparable to what Dominique Malaquais calls “ville-flux”: composed of spaces born of complex overlaps, intense, contradictory, each generating others, carriers of multiple realities (Lagae, 2010). It is an atypical urban landscape resulting from an urbanism where the action often preceded the results of the analysis (Mutambaï, 1971). This urbanism based on a popular urbanization mixed with “villagization” or “ruralization” (Trefon, 2000) led to a city “of verb architecture” (De Boeck

& Jacquemin, 2006) where the idea of the habitat is enough to shelter the Kinois. As a result, in the eyes of the “powerless” or “resigning” state and the poor people in loss of marks, the environment is deteriorating and is increasingly struggling to ensure quality habitats (Trefon, 2000).

All in all, the current ecological issues are at the origin of multiple arguments in favor of sustainable urban planning (Chalot, 2015; Da Cunha, 2015). The implementation of such urban planning requires a retrospective analysis of urban settlement practices, especially in African cities such as Kinshasa. This analysis, which can be envisaged under multiple thematic and methodological entries, cannot skip the need of the green systems review. In order to achieve a better quality of life in the urban landscape, vegetation has undeniable importance since the urban environment is subjected to the phenomena of heat islands, various pollutions, climatic changes and its corollaries (floods, erosion ...) (Botkin & Beveridge, 1997). The present study then proposes to carry out a survey of the green landscape evolution in Kinshasa. This study specifically seek to understand how the vegetation cover is described by the populations over the time and how it is described in the existing documentation? The given meaning to the “green landscape” is the plant component of the urban and peri-urban fabric considered its spatiality and its contribution to the quality of the habitats.

MATERIALS AND METHODS

Starting assumption: statement and rationale (justification)

Several authors have previously, in many ways, studied the evolution of African urban landscapes and Kinshasa in particular. Lelo Nzuzi (1989) analyzed the evolution of urbanization and urban planning in West and Central Africa.

He recognizes three major periods in Negro-African urbanism: the imitation period (1960-1970); the revision period (1970 to 1980) and the innovation period with integration of socio-cultural aspects (1980 to present).

By re-reading the genesis of spatial planning in Congo-Kinshasa, Mutambaï (1971) distinguishes three

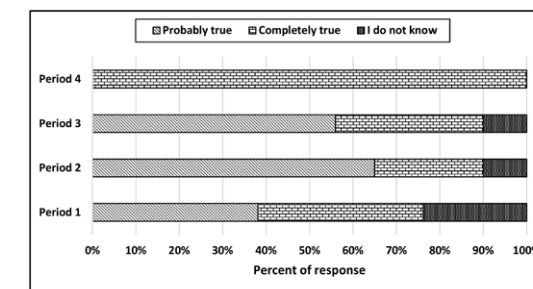


Figure 1: Distribution of respondents' responses according to their adherence to the hypothesis of four periods of evolution of the green landscape of Kinshasa. Period 1 – before 1881: original green landscape; period 2 – Belgian Congo (1881 - 1960): imported green landscape; period 3 – postcolonial Congo (1960 - 1980): mimetic green landscape; period 4 – contemporary Congo (1980 to the present): unbalanced green landscape.

important periods. This is the Leopold period (1885 - 1910); the post-Leopold period (1910 - 1960) and the first decade of Independence period (1960 - 1970).

De Maximy (1984) also describes the path of the Kinshasa urban project in three periods in his book entitled “Kinshasa, ville en suspens”. He distinguished successively the Belgian project resulting in an alienated city; the Zairian project that has maintained an abandoned city and the Kinois project, engine of a city in search of identity.

The evolution of the Kinshasa green landscape cannot be in margin of the periodizations previously mentioned. The place of the plant in the development is indeed strongly related to the ideals and priorities of the moments (Mehdi et al., 2014). The present study on the city of Kinshasa, was then based on a hypothesis of periodization in four phases of the evolution of the Kinshasa green landscape:

(i) the period of original green



Figure 2: Photo in the European neighborhood of Kinshasa (Ministry of the colonies, 1951)

- landscape (before 1881, date of creation of the city);
- (ii) the period of green landscape “imported” into the Belgian Congo (1881 - 1960)
- (iii) the postcolonial period with mimetic and unfinished green landscape (1960 - 1980) and finally
- (iv) the contemporary period with an “unbalanced” green landscape (1980 to the present).

Methods

The study uses a mixed approach of historical and descriptive reading of the territory based on the paradigm of “trace-écart» (Occhiuto, 2005). Such an approach has the advantage of allowing a «ladder interlocking» analysis. In addition, it is based on the need to browse, listen, and understand the territory in order to build an image of it (Secchi 2000 quoted by Leloutre & Vigneron, 2015).

The mixed research approach was employed involves:

- Unstructured and informal interviews with 100 people over a one-year period from July 20, 2016 to July 20, 2017. Only people aged 30 or over who had lived the different phases of landscape change. Only one question was asked to the surveyed: «how can you describe the key elements of the green landscape of the city of Kinshasa over the four periods distinguished in the basic hypothesis?» The question was made out like such in order to having the possible elements of major differences to check the starting assumption. Thus, according to the respondents’ responses, their agreement with each of the four periods of the basic hypothesis was classified according to three increasing agreement degrees: “I do not know”, “probably true” and “completely true”. The frequencies of the agreement degrees were then computed for each period and tabled graphically.
- Bibliographic research: it consisted in reviewing the historical and present documents about the city in terms of green landscape, in particular the textual documents (monographs, correspondences, ...), cartographic and photographic. The analysis carried out was to identify the distinguishing elements of the four hypothetical periods in order to check if they stand or not.
- Direct observation: it consisted of journeys through the city to understand the current realities of the green landscape.

RESULTS AND DISCUSSION

What the population knows about the evolution of the city green landscape

Among the four hypothetical periods only the last one, corresponding



Figure 3: Photo of an avenue in the European neighborhood of Kinshasa (Ministry of the Colonies, 1951)

to the present time, is indeed the best known. On the other hand, the first three periods that require retrospection are therefore described with inaccuracies. However, the survey results show a real tendency to confirm the latter with 75-90% of cumulative proportions of confirmatory responses (Figure 1). The respondents are therefore largely tend to confirm the hypothesis of the description in four periods of the evolution of the green landscape of the city.

In the first period, the respondents describe the landscape as a mosaic of forest-savannah with remarkably dominant species such as palm trees (oil palm ...) and baobabs. According to the respondents, the landscape in the second period remained abundantly green. In the third period, after Independence, the dual green landscape of the colonial period was maintained for a moment. However, according to the respondents, the maintenance of the vegetation was not well assured. The green device of the city center has regressed sharply. In the

last period, the regressive situation of the green landscape which started since Independence has worsened. Indeed, many garden spaces are replaced by buildings. The trees felling has become recurrent, especially in peripheral areas.

The evolution of the Kinshasa green landscape through the existing historical documents

The review of the existing historical documents helps us to distinguish at least four consecutive periods in the history of the green landscape of the city. Although the limits of the periods have proved to be indicative, discriminating elements have been found and are discussed below.

Kinshasa originally (before 1881): malebo landscape

The first writings describing the landscape of Kinshasa are obviously those of its creator Stanley in his letters addressed to the King of the Belgians. In his letters he described a luxurious vegetation that characterizes the Congo Basin. There are few

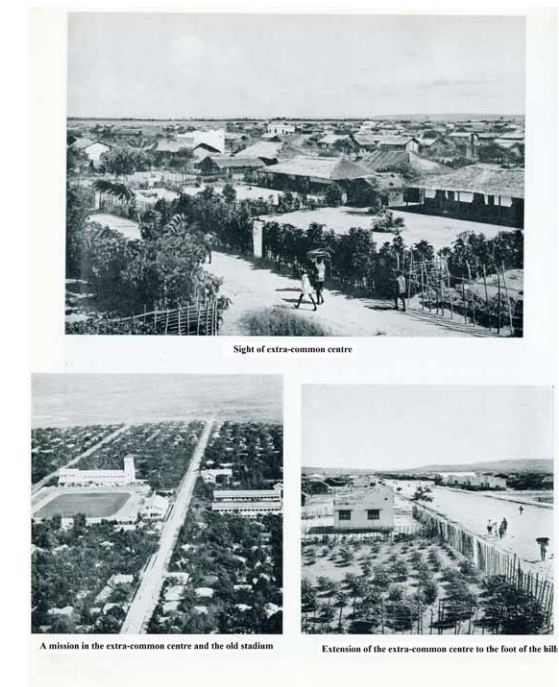


Figure 4: Photos illustrating the organization of indigenous neighborhoods (Ministry of the Colonies, 1951)



Figure 5: Photo of an avenue in an indigenous neighborhood (Ministry of the Colonies, 1951)

pictorial documents that talk about the landscape of the period before the colonial installation. However, all authors agree that the natural vegetation of the Kinshasa region was composed of dense dry forests, savannas and aquatic and semi-aquatic formations in the valleys and around the *Malebo* Pool (Kikufi and Lukoki, 2008; 1984). In contrast, the hills had sub-steppe-like open savannas because of the high permeability of the Kalahri sands that make up their soils (Miti et al., 2004). In any case, the authors all agree that the city's landscape was originally beautiful and dominated by palms (*Malebo* is in vernacular language) (Fumuzanza Muketa, 2008) and baobab (Lelo Nzuzi, 2008).

Kinshasa of the Belgian Congo between 1881 and 1960: "imported" green landscape

In this period there was not any development plan. Originally installed at Kitambo Bay, Kinshasa still resembled in 1907-1910 "a sleepy village on the banks of the Congo River buried

under the shade of a 100-year-old baobabs and borassus with big red berries that will earn it the nickname of "Kin-malebo" (Pain 1984: 15). With the decree of 21 February 1949 on urban planning in the Belgian Congo (Ministry of the colonies, 1951), the city green landscape will undergo profound changes by the intervention of the local urbanism plan (1950). The review of the Kinshasa land cover maps in 1950 and 1957 by Pain (1984) and that of the green areas proposed by the Ministry of the Colonies (1951) clearly reveal the radical double dualization of the green landscape that has occurred. Obviously, with the urbanization of the plain, the forest vegetation that existed there was degraded into savanna whose dominant grass was *Loudetia demeusei* or *Loudetia simplex*. On the other hand, the hills that bordered the plain from east to northwest were still largely covered with forests. Apart from this dualization due to the topography of the site, there is a second dualization due to the separation of the living area between the "whites" (or "mundele" in Lingala) and the "indigenous" made up of African natives (Ministry of the Colonies, 1951).

At that time, the *mundele* area was rich with modern green amenities (parks, public gardens, squares, green walkways) (Figures 2 and 3). For European neighborhoods, the primary need was to preserve a pleasant environment created by space and trees of local and new species (Bruyere, 1952). Willing or not, those amenities would contribute to import the European green landscape of that time. This is reflected in the autobiography of the city's native writers about their experiences in the white area (Lelo Nzuzi 1989, Feignond, 1997).

Beside this paradise-like green landscape in the European city, a rather "wild" but "hygienist" green landscape has developed. Structured in vast monotonous flat spaces, African neighborhoods were organized

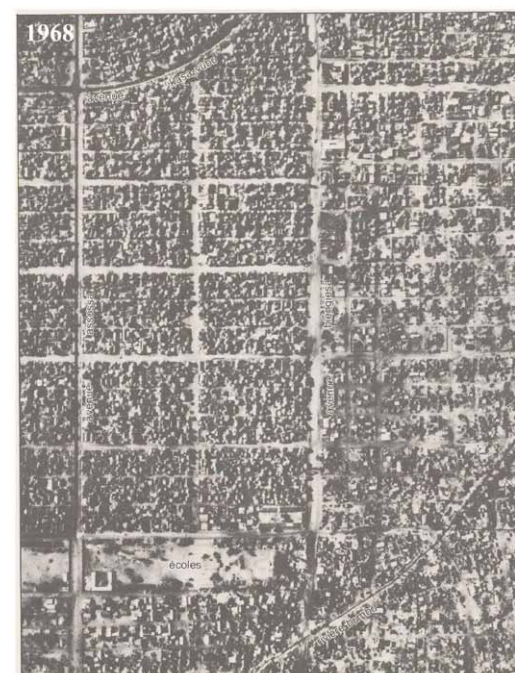


Figure 6: Comparative situation of planned and spontaneous cities in 1968. New district of the 1930s-1950s in the West and spontaneous extension area from the 1960s to the East. Maintain the orthogonal plan but net difference in density of habitats and vegetation (Pain (1977) in Flouriot et al., 1978)



Figure 7: Green situation of planned and spontaneous cities in 2016 A new city district of the 1930s -1950 in the West and district of spontaneous extension of the 1960s in the East. Densification of buildings and low vegetation cover. (Image Extracted from Google Earth) Figure 7

according to strict standards (Figures 4 and 5) based on the preservation of native trees and living fence (Bruyere, 1952).

Kinshasa in postcolonial period between 1960 and 1980: mimetic and unfinished green landscape Exceeded by the growth of the city after the Independence, local authorities appealed to the Belgian expertise to produce the regional plan of 1967. This plan (which quickly become obsolete) that aimed to limit the urbanization at the level of the plain, had the merit of promoting agricultural green spaces. In this same logic of the imitation of urbanization in the plain, a Master Plan of Urban Development (MPUD) will be elaborated in 1975 with the support of French experts. Although never applied, its reviewing reveals the importance of green spaces and the natural conditions of the environment (Flouriot et al., 1975). It is certainly under the influence of the MPUD that the rulers of that epoch would continue to maintain for at least a moment, a green landscape similar to that of the European cities to assert their supremacy. Meanwhile, the hills are quickly occupied and their forest cover largely degraded into savannah of *Loudetia demeusei* or *Loudetia simplex*. The report is striking on the situation of land cover in 1968 vs. that of 1957 (Pain, 1984).

On a much smaller scale, it is observed that in this period, planned neighborhoods more or less dense, still preserved a significant vegetation cover. In contrast, the new, less dense neighborhoods had only low vegetation cover (Flouriot et al., 1978) (Figure 6).

Although visibly, the green landscape after the Independence had not yet profoundly changed compared to the colonial period at least in the urban area, it is certain that it was marked by an undergone mimicry. The failure of the successive plans drawn up for the city, reveals that the visions and the green infrastructures remained unfinished.

Kinshasa in contemporary period (after 1980): "unbalanced" green landscape

CONCLUSION

From a fascinating city to an unbridled city, that is the widely recognized pathway in Kinshasa. The present study confirms and repaints the same regressive course for its vegetal cover. From a natural green landscape to a desired green landscape, the green landscape of the city is currently suffering and abandoned in a real imbalance. This reveals a landscape where there is a tension between the natural conditions of the environments, the urban and peri-urban settlements and the socio-spatial needs of the populations. This conflict is becoming more and more acute with the widespread wounds that the territory undergoes. For example, there are many ravines and piles of rubbish visible in the city and the increase of flooding of banks of bare rivers.

On the other hand, in this conflict landscape, there is still a residual green potential that can play the role of reconciler. In a context of impoverishment of populations where the state is “powerless” or “resigning”, reconciliation can only be based on the strength of the people. And, this strength lies in the local practices and the co-participation of the inhabitants to enhance their living environment by the establishing a landscape, rather a green system adapted to their needs and their socio-cultural and identity context.

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Today, in many ways, the city is abandoned to itself. As proof, it was only recently (in 2014) that a Strategic Planning Guidelines for Kinshasa (SOSAK) was developed. Focused on large infrastructures, this SOSAK envisions the greening of the city only through the vegetable gardens. It is certainly an answer to the real need to feed the city but an answer that will not favor the establishment of a multifunctional green network.

At the same time in spatial extension and in densification, the territory of Kinshasa presently has a green landscape strongly contrasted between its urban area and that peri-urban. In its urban area, roads previously lined with trees are lacking. Most important green interstices are replaced by petroleum product sales outlets that leave only symbolic lawns. Urban neighborhoods that were once densified into domestic trees are almost completely devoid of them (Figures 6 and 7). However, it is striking that the least empty space in the urban area is valued by vegetable crops.

Constituted for most spontaneously settled neighborhoods and on the hills, the peri-urban area presents collective green spaces only as market gardens. Nevertheless, this zone appears strongly green on the aerial views because of the strong presence of domestic trees (Sambiéni et al., 2017).

It appears that a green potential still exists in the city. However, this potential is in constant decline and is poorly distributed and composed, because of the laissez-faire system. It is in this sense that the expression “unbalanced green landscape” is used to explain how it is abandoned to itself and does not adequately respond to the socio-spatial needs of the population.

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What Landscape for Kindele (Kinshasa, DRC)? Environments and Communities with Natural/ Human Interrelations to Reconcil/Reinvent by the Project

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Keywords:

Informal Settlements; Erosion Landscape, Geomorphic Agents, Landscape Awareness, Local Knowledge.

ABSTRACT

After independence (1960), Kinshasa (DRC) experienced a population explosion leading to massive urbanization of the hilly and sandy suburban area. These unplanned settlements, spread out on a water marked relief, imposing a square mesh urban model on unstable lands. Soon, in the slope of KINDELE appeared erosions. The study of the joint actions, natural and human interacting on this site makes it possible to affirm that the erosions are the visible sign of the existing conflict, and still ongoing, between the way of living and the geomorphological and landscape capacity to accept this urbanization. The investigation of the territorial equilibrium has set out the importance of intervening on the geometries of the street networks and parcels to readapt to the relief in order to regulate the speed of water flows and to decrease the impact of this natural force on the stability or gully soils: an urban rehabilitation. This results in a methodology based on hypotheses-projects that make it possible to envisage urbanization as a factor of landscape coaction to be accompanied over time. The objective of this contribution is not to study modes of new settlements, but rather to bring out the logic to follow in order to restore to these sites conditions favoring true sustainability.

INTRODUCTION

The current housing situation in Kinshasa is marked by a crisis that

continues to result, informally, not only in new occupations of hill sites, but above all, in several forms of densification. In the upper city, with sandy soil, low road structure (earth roads) and high risk of erosion, these processes lead to serious environmental problems related in particular to the management of runoff water as a result of increase of impervious surfaces.

The study of a good sanitation of rainwater begins with the parcels allotment (S.M.U.H., 1977: 35). Adaptation to topography involves preventive control of erosions, a well-designed sanitation network and paths with practicable slopes (Ibid.: 48). In KINDELE, checkerboard developments, devoid of stormwater collection and management structures, receiving water from impervious soils of upstream housing estates and heavily waterproofed plots, have created, with walking, ways for runoff water. These muddy streets turn into real torrents at the time of showers and cause great ravines where the slopes exceed 12.5% (VAN CAILLIE, X., 1997, KAYEMBE M. & WOLFF E., 2015: 126).

How, for a framework already built, in full transformation and strongly degraded by erosions such as that of KINDELE, recreate housing spaces guaranteeing a high quality of life at the collective level? To state hypotheses of progressive transformation of the territory, based on the revision of road and parcel meshes, would make it possible to reconcile the housing with its environment. This urban rehabilitation would provide an opportunity to replace, on the basis of the adopted "project-based approach¹", the landscape at the center of the development system in these areas.

THE URBAN MODEL WITH SQUARE MESH OF THE KINDELE VALLEY: A HISTORICAL RECALL

The area concerned by this study is



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