EFFECTS OF URBAN MORPHOLOGICALTRANSFORMATION ON LEGIBILITY OF THE CITY OF DAR-ES-SALAAM-TANZANIA

(Case of Kariakoo area)

(RESEARCH THESIS)

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Declaration

This research project is my original work and has not been presented for a degree in any other university.

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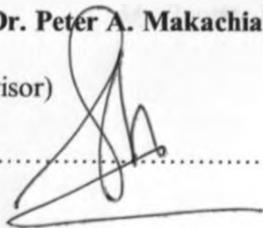
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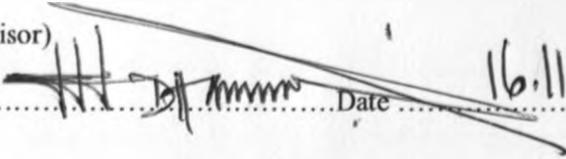This thesis has been submitted for examination with our approval as the university supervisors

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Dedication

To My wife Edna Stephen Chitanda who always encouraged and supported me

&

My Parents Mr and Mrs Elia John Liombo

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ABSTRACT

General concept of the study of effects of urban transformations on legibility of the city of Dar es Salaam in Tanzania is based on background of the works of Karimi (2000), Alcock et al (1985), Andrew Kelly (2003), Nomico and Sanders (2003), Lynch (1960), Klasander (2004), Lupala (2002), Anyamba (2006), Makachia (2010) and Moshi (2009).

This study was carried out in a period of one year. In this period the study explored, literature on urban transformations, legibility and on the relationship between the urban transformations and legibility. From this literature the study deduced the following; (i) Urban transformation and legibility studies base on physical form of an urban setting (ii) Urban morphology study is an appropriate approach to studying and analyzing urban transformations that may affect legibility of a setting (iii) Legibility of an urban setting, depends much on the qualities embodied in its five elements of image, which get lost whenever the setting undergoes transformation. Further the study employed a case study method in Kariakoo area in Dar es Salaam. The main findings are (i) Kariakoo urban setting is made up of all elements of image (ii) the elements of image of this area, undergo transformations (iii) the qualities of the elements of image of Kariakoo are eroded thereby changing the state of its legibility.

From these findings, the study concludes by saying that the transformation of elements of image of Kariakoo, results into both, strengthening of some image elements and weakening of others. Therefore the legibility of this area is

impacted both negatively and positively, though to a greater extent negative ones are most strong.

This study therefore recommends that, the government should intervene to the process of transformation taking place in Kariakoo. This may be through its professionals to formulate control guidelines that will guide the development of this area focusing on making it legible. The study also proposes some ways that can be used to make the area legible.

TABLE OF CONTENTS

LIST OF FIGURES

ACRONYMS

AA	African Association
A.D	Anno Domino
ARU	Ardhi University (Formerly UCLAS)
CBD	Central Business District
CCM	Chama Cha Mapinduzi (Revolution Party)
CIAM	The International Congress of Modern Architecture
DCC	Dar es Salaam City Council
DDC	Dar es Salaam Development Corporation
E – B	Environmental/Behaviour
GoT	Government of Tanzania
IMC	Ilala Municipal Council
KCB	Kenya Commercial Bank
KKKT	Kanisa la Kikristo la Kilutheri Tanzania
KRS	Kariakoo Redevelopment Scheme
LGO	Local Government Office
MLHSD	Ministry of Lands and Human Settlements Development
NHC	National Housing Corporation
PPF	Parastatal Provident Fund
TAA	Tanganyika African Association
TANU	Tanganyika African National Union
TNA	Tanzania National Archives
UCLAS	University College of Lands and Architectural Studies
URT	United Republic of Tanzania
WEO	Ward Executive Office

1. INTRODUCTION

1.1 Background Information

Urban settlements have been undergoing transformation all over the world. Modern transformations are rapid, large-scale and destructive contrary to traditional ones that were slow and adaptive. (Karimi, 2000, p. 62). According to Alcock *et al* (1985, p. 50) these transformations radically change area's image.

Creation of legible urban environments is becoming a crucial issue worldwide as according to Kelly (2003) city's image and the quality of its urban environment are vital to its local economy and its national standing. Bristol legible city project is an example of the project that aimed at restoring legibility of Bristol city in England which was eroded due to bombing attacks the city suffered during Second World War. In mid-90s after implementation of this project, the city witnessed most dramatic periods of development and regeneration in her history.

In the course of creation of legible urban environments, cities need to find their own solutions, based on their history, strengths, traditions, mores to become legible (Kelly, 2003, p. 74). African cities are among cities in the world which have got unique history, strengths and traditions. These cities need their own solutions to become legible. Durban city in South Africa is an example of a city which was made legible through implementation of concept of democracy during its design. According to Nomico & Sanders (2003) the

process demanded the dismantling of the brutal markings imprinted by apartheid planning on the South African built environment. Umhlanga Ridge development and 'Centrum, Enkabeni Yedolobha (Heart of the City)' are examples of projects that aimed at restoring back the legibility of Durban.

Dar es Salaam city in Tanzania was once to be made legible. This need was for example reflected in its master plan of 1968. According to URT[1], in this plan, planners had the following vision of future Kariakoo;

> *The central area (which Kariakoo was part of) should be an expression of the personality, image and vitality of the capital city and its region. It must express through good planning and in human terms, a structure and physical form appropriate to its unusually advantageous setting and also to the dignity and importance of the government. At the western side of the Mnazi Mmoja Park, the proposed open space forms a focus of concentration of government offices. Its edges would be sharply defined as they provide a foil to buildings to a maximum height of 15 storeys in character with the recent Cooperative building* (Lupala, 2002, p. 95).

According to Lynch (1960), legibility of a cityscape means the ease with which its parts can be recognised and can be organised in a coherent pattern. The ability of this cityscape to evoke strong image is what he called its imageability. He therefore argues that, for an urban environment to be of high imageability, its five elements of image (Paths, Edges, Districts, Nodes and Landmarks) need to have some particular special qualities[2] to enable it evoke strong image. The elements according to him lose or change their qualities whenever that particular setting undergoes changes or transforms as a result its legibility becomes affected. For example, according to Klasander (2004), the concrete suburbs in Sweden became non-legible due to transformation that took place on its image elements (streets, open spaces, buildings and movement networks). Transformations on these elements resulted into weak

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[1] Cited from Lupala (2002, p. 95)
[2] Qualities of elements of image by Lynch (1960, p. 99)

relationships between street, open space and buildings, and also independent layouts of buildings and movement networks.

The nature of transformations and their impacts on legibility in developed and developing countries do differ from one another. Unlike in Europe and other industrialized countries where urbanization was triggered by industrialisation and cities were largely organised in a regular manner, on-going changes in many of the cities in poor countries have their roots in colonial planning influences. City growth in these countries has been largely unregulated (Lupala, 2002, p.1). This is because, many formal processes have been unable to cope with the demand for urban goods and services, and as a result informal processes spring up to fill the gap left (Anyamba, 2006, p. 218).

In Dar es Salaam city particularly in Kariakoo area, the elements of image are being affected by informal transformation processes. This area has become a product of individually driven and often uncoordinated incremental changes (Moshi, 2009). In the same line, Lupala (2002, p. 110) argues that, the lack of enforcement of development control measures in Kariakoo warrants a number of issues worth questioning. Are trends in housing transformations that are taking place with little or no guidance in Kariakoo be paralleled or considered to typify informal developments? Are the emerging functions and forms therefore a depiction of informal sector demands and therefore a failure or displacement of the formal sector? Is Kariakoo informalising when formal urban types are taken into consideration?

This trend of unguided developments, result into uncontrolled urban transformations which changes the special qualities embodied in the elements of image of these environments and thereby change its legibility.

1.2 Problem Statement

In Kariakoo by now, among other things, old buildings are being pulled down and new ones are being built. On the other hand, according to Lupala (2002, p. 110) developers continue to densify the plots by developing houses with the maximum number of storeys and high plot coverage irrespective of pre-requisites for spatial qualities as stipulated in the zoning and development standards for this area.

With regard to the nature of transformation taking place in Kariakoo area, the qualities of image elements of this setting undergo changes from time to time. Lack of sufficient knowledge on transformation of Kariakoo urban settlement and its impacts on legibility of Dar es Salaam city, limits the mainstreaming of interventions to spatial quality (particularly on aspect of legibility) development and management process within the urban planning framework in Tanzania.

1.3 Aim and objectives of the Study

1.3.1 Aim
The overall objective of this study is to modify the existing or develop new control guidelines that will guide transformations for achievement of legible urban settlements in Tanzania.

1.3.2 Objectives

i.   To identify the elements of image of the area and document their location, connections, strength, weaknesses, interrelations and meanings.

ii. To identify and document the transformations that takes place in the elements of image of the area.

iii. To document and analyse discrepancies in the image qualities before and after transformation.

iv. To propose ways applicable in creating legible urban environments in Kariakoo and African cities in general.

1.4 Assumption

The unguided transformation going on in Kariakoo leads to loss of necessary qualities that are embodied in the elements of image of this area. In so doing the structure, identity and meaning that are the main components of analysis of image of a particular environment get lost. Therefore, since environmental image is a strategic link to way-finding activity, the legibility of this area will also get lost.

1.5 Significance of the study

This study is considered a contribution to the research community because it addresses the impacts of transformation on the legibility of African urban settlements. The study also attempts to contribute knowledge on how transformations can be controlled focusing on achieving legible urban settlements. Furthermore this study identifies the image elements and their qualities in the research area which is yet to contribute to knowledge on African urban image elements' qualities.

Findings from this study will guide urban development policy. The study is going to propose some ways of nurturing the opportunities through making its environment legible in order to attract business investors, tourists, and even other kinds of visitors. This was also observed by the Sunderland's city council executive director of city services who once argued that;

> *Perceptions have become more important as many decisions of people, companies, investors and visitors are based on them. Positive images are crucial in the regeneration of cities in transition. Similarly a strong local identity is not only important for social cohesion but can be an asset to differentiate a city from its peers to employers, visitors and investors* (Executive Director of City Services, 2010).

In that way, African urban settlements legibility credentials will enhance the area's offer to corporate investors aiding inward investment for developments.

1.6 Scope and Limitation of the Study

1.6.2 Physical scope

Urban transformations can be analysed basing on many aspects such as socio-economic, physical and technological perspectives. Since legibility is concerned with physical form of the city, this study focuses on aspects that transform the morphology of the urban environment.

1.6.2 Physical limitation

The study was limited to Kariakoo area only. This is due to limited resources, that is time and funds available for the task.

1.7 Organization of the Report

The report is organized in six chapters as follows;-

- Chapter one gives the introduction of the study. It includes Background information of the study, problem statement, research objectives, and study assumption, significance of the study and scope and limitation for the study.

- Chapter Two is on literature review. It will entail description of Urban design and form, urban morphological transformations, concept of legibility of a cityscape and its historical exploration, Urban morphological transformations and legibility of African Cities and conceptual framework for this study.

- Chapter Three discusses the methodological approach used for the study. It entails discussion on how the research is designed, choice and justification of cases, research procedures applied in this study and research methods applied in data collection activity.

- Chapter Four offers a chronological description of morphological transformations that take place in Dar es Salaam city and in Kariakoo area and their effects on legibility of the city and Kariakoo.

- Chapter Five gives results and discussion of findings.

- Chapter Six gives conclusion, recommended actions and area for further research.

1 THE INTRODUCTION	• the outline of the work
2 LITERATURE ON URBAN MORPHOLOGICAL TRANSFORMATIONS AND LEGIBILITY	• review of empirical and theoretical literature
3 RESEARCH METHODOLOGY	• methods, strategies and tactics used, background to cases
4 MORPHOLOGICAL TRANSFORMATIONS AND LEGIBILITY OF DAR ES SALAAM CITY CENTRE AND KARIAKOO	• Study area of Dar es Salaam and Kariakoo
5 FINDINGS AND DISCUSSIONS	• Kariakoo findings and discussion
6 CONCLUSIONS AND RECOMMENDATIONS	• Conclusions, Recommended actions and area for further research

Figure 1.1: Thesis Structure. Source: author, 2012

2. LITERATURE REVIEW

This chapter provides a discussion on the theories and concepts of urban morphological transformations and legibility of an urban setting. It further discusses the way urban morphological transformation affects legibility of an urban setting. Since these two issues are concerning with urban form which is the centre of urban design subject, this study therefore begins with providing meanings of urban design and form before discussing the core issues.

2.1 Urban design and form

Urban design represents the subject area where town planning and architecture meet, that is, the design and layout of urban spaces (Ratcliffe, *et al.*, 2009, p. 217). It gives three-dimensional physical form to policies described in a comprehensive plan. Key elements of its plan include the plan itself, the perception of design guidelines for buildings, the design for the public realm-open space, streets, sidewalks, and plazas between and around buildings. (American Planning Association, 2006, p. 10).

There are various ways in which an urban form or physical form of an urban setting may be described depending on authors' perspectives. Kevin Lynch's (1960) categorizes the urban form into five elements path, edges, districts and landmarks. Beckley (1979) claims that there are three major elements that determine the shape of the built environment namely, building open space and street. Krier (1979), in his seminal studies of urban design, showed the physical form of a city as urban spaces and concludes this on the basis of typological and morphological elements of urban spaces of a city, which are

the squares and the streets, as products of groupings of buildings. John Brickerhoff Jackson (1984, p. 12) asserts that, urban form "is the image of our common humanity that is, hard work, stubborn hope, and mutual forbearance striving to be love. Conzen (1960) says the physical form of a city can be categorized into three basic elements the building fabric or building form, the ground plan and the land use.

As far as the three schools of urban morphology[3] are concern, the city or town can be 'read' and analysed via the medium of its physical form (Moudon 1997, p. 7) that can be studied under urban morphology, typology and typomorphology studies. According to Bosselmann (2008, p. 193) urban morphology describes the form of cities and changes to city form over time whereas a related discipline, typology, describes the variation that can be observed in specific elements of city structure such as buildings or streets. The interest of both fields of knowledge; morphology and typology in urban form is less concerned with architectural style. Most of Architects and urban designers are influenced by a typomorphological approach to city design. This approach deals with built environment as a processual whole, having formal, functional and signifying dimensions (Verwijnen 1997, p. 62)[4]. Here the emphasis of process; not the synchronic, Visualisable form, is important (Lehtovuori, 2010, p. 70).

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[1] Cited from Moudon (1997, p. 7)
[4] Cited from Lehtovuori (2010, p. 70)

2.2 Urban Morphological Transformations

Transformations that take place within urban forms or morphological transformations can be understood through urban morphology analysis technique which is used to study the present and past historical patterns of urban structure, form, land use and patterns. This technique provides an understanding of the existing physical form and structure of the urban environment at different scales, from individual buildings, lots, street patterns and blocks. (Ministry of Environment, 2009, p. 28).

2.2.1 Land uses

Compared with other key elements, land uses are relatively temporary. Incoming uses often lead to redevelopment and creation of new buildings, to plot amalgamations and, less often, to subdivisions and changes in the street pattern (Carmona *et al.*, 2010, p. 61).

2.2.2 Building structures

Transformations in building structures may be carried on an individual building or a building together with its plot on which it stands. For an individual building or dwelling, transformation according to Tipple (1991, p.4) refers to "an alteration or extension involving construction activity using materials and technology in use in the locality". Nguluma (2003, p. 58) argued that, there are some activities excluded in Tipple's study, which could also be considered as transformation. The activities are repainting, changing the design of doors and window frames, hanging curtains to divide rooms and changes in the use of spaces. She also argues that, some parts of houses are repaired, maintained or improved upon and a house, which is getting too old and no longer serves its purpose, may as well be replaced.

Transformation of a building together with is plot is another scenario. According to (Carmona *et al.*, 2010, p.62) plots may start out as long, narrow fields laid out perpendicular to a street or circulation route. The first part of the plot to be developed becomes that on the street frontage or head of the plot. Through time, the buildings may be extended upwards or towards the rear of the plot and eventually to the tail of the plot. Later the intermediate spaces may be developed as free standing buildings or sometimes through additions to the initial/existing buildings. When all the plot area is developed, a partial or complete clearance before total redevelopment may take place. This cycle of development which plots and buildings undergo is termed as a plot/burgage cycle (fig. 2.1) in England.
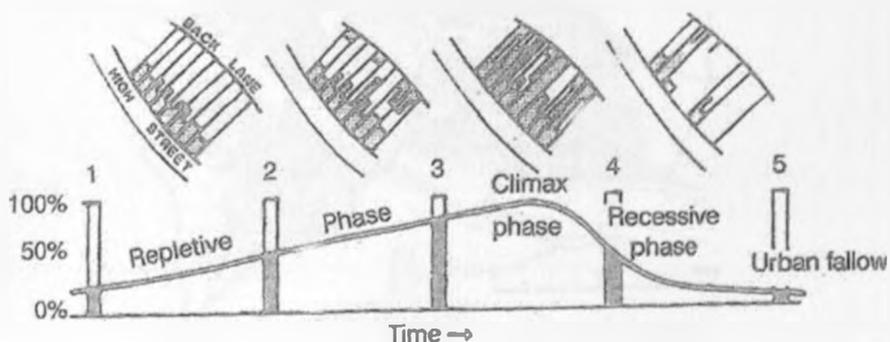
Figure 2.1: Plot/burgage Cycle. Source: Larkham (1996, p. 33)

2.2.3   The plot pattern

Cadastral units (urban blocks) are typically subdivided or 'platted' into plots or lots. Overtime as plots are bought and sold, boundaries can change. Larger plots may be subdivided, or several may be amalgamated. As plots have been amalgamated to enable the construction of larger buildings, plot sizes have become larger (Carmona *et al.*, 2010, p. 63).

2.2.1   The cadastral (street) pattern

Cadastral pattern is the layout of urban blocks and, between them, the public space/movement channels or 'public space network'. According to Carmona *et al.*, (2010, p. 63) the Cadastral patterns are sometimes characterised by processes of change, where current uses overwrite, but do not completely erase, the marks of prior use as a result ground plan of most settlements can be seen as a series of overlays from different ages. In Florence, for example, the street pattern is still evident in the plan of the city's central core (fig.2.2).

Figure 2.2: The street pattern of central Florence retains the layout of the original Roman settlement. Source: (Carmona *et al.*, 2010, p. 64).

Transformation of spatial structure sometimes happens for example in countries and regions with a long history of incremental urbanisation whereby most urban grids are 'deformed' (fig. 2.3). In a 'deformed' grid, the structure of the space is deformed in two ways. First the shaping and alignment of the islands of buildings (i.e. urban blocks) mean that sight lines do not continue right through the grid from one side to the other but continually strike the

surface of the building blocks. Second, as one passes along lines, the spaces vary in width. Hillier (1996) argues that 'deformities' in the grid affect visual permeability and are, thereby, an important influence on movement.

Figure 2.3: Plan of Rothenburg, Italy. Source: (Carmona *et al.*, 2010, p. 63).

2.2.2 Transformation of other features of spatial qualities

When transformation occurs in any physical environment, it affects also other features apart from buildings. These include features among others floors or facades textures, street lightings, set of smells or sounds, plantings, walls, vegetation, topography, skylines along streets or other parts of the city. These features are very important in enhancing spatial qualities of a particular setting, so any transformation on them may have impacts on qualities of elements of image of the setting and eventually its legibility. These are also considered in this study.

2.3 Legibility of a cityscape and its Historical Exploration

Legibility of a cityscape is essentially considered to be a physical and spatial quality of surroundings. Lynch (1960, p.2) was the first to define the term Legibility. He defines a clarity or legibility of a cityscape as "the ease with which its parts can be recognized and can be organized into a coherent pattern" or "the degree to which the inhabitants of a settlement are able to communicate accurately to each other via its symbolic physical features". There are other authors who also defined legibility. Passini (1992)[5] defines legibility as "the ease with which environmental information is obtained and understood". Southwell (2002)[6] says "legibility is a spatial consideration that is interlinked with imageability". Phillip (2009, p. 37) describes legibility of a space is the space's ability to communicate to user that the space is usable and what uses it affords.

The concept of legibility is not new in the world. It started when people raised their concerns for orderly environments. For example, according to Cherry (1931, p. 20) early cities like Ur and Eridu had particular forms often rectangular showing a concern for orderly environment. In so doing, these cities became legible as per concept of formality which according to Smith (2007), refers to works whose organisational principles are clear to observers or participants. It was so since the concept of formality according to Smith (2007), relates to five of the ten form qualities for a highly imageable landscape. These qualities are singularity, form simplicity, continuity, dominance and clarity of joint as described in *The Image of the City* by Kevin

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[5] Cited from Phillip (2009, p. 37)
[6] Cited from Phillip (2009, p. 36)

Lynch. Towns of the Mississipian culture (fig.2.4) are good examples of such cities which show formality in their arrangements of temple, mounds, plazas, and palisades (Smith, 2007, p. 10). Another town is the Mayan town of Becan (fig.2.5) that provides an example of coordination among buildings and spaces with respect to common features.
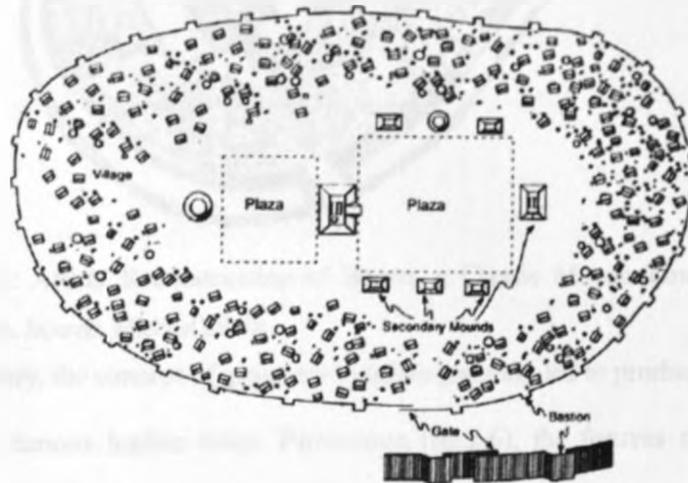
Figure 2.4: Idealized Layout of Mississippian Towns in the Central United States. Source: Michael Smith

Furthermore, the monuments like pyramids and palaces were being built to promote a variety of ideological messages. These monuments according to Pile (1996, p. 212) were making these urban spaces legible. He further argues that, any 'walker in the city' would be able to recognize the monument as a site of 'intensity', as a work of special significance (Pile, 1996, p. 144). In this way monumentality produces spaces which just as it is possible to 'read' them or see them as the message are meant to be lived (Pile, 1996, p. 144).
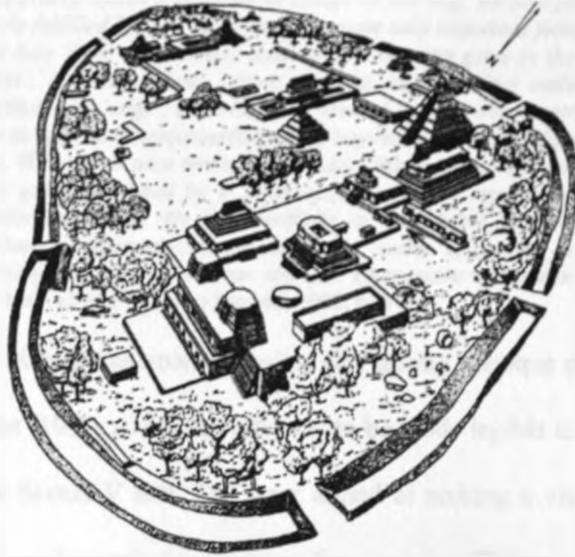
Figure 2.5: Artists Reconstruction of Becan, a Classic Mayan Town in Guatemala. Source: Michael Smith

In 16th century, the concept of geometry in urban planning led to production of some very famous legible cities. Parmanova (fig.2.6), the fortress city for Venice is among the cities under this category.

Figure 2.6: A legible structure of Parmanova. Source: tslr.net

According to Sasaki (2000, p. 37), the city was among the most legible cities during Baroque planning period. He further argues that;

By applying Lynch's elements of image of the city, we find four of these elements clearly fulfilled by this 'ideal city'. To quote only important factors, as to 'paths', you have here three main streets leading from the city gates to the central circle; as to 'edges', it goes without saying that the most striking outline of the city itself constitutes its 'edge', since the total area of the city was constructed at higher level than its surroundings(according to my impression, the outer bank is about ten metres high. We cannot pass through this outer line except at the three gate points; these three gates, designed by V Scamozzi, are without any doubt the most important architecture of the city and constitute its 'landmarks', as does the cathedral also attributed to Scamozzi; the gates are also 'nodes' of the city, as is the central circle. All things considered, we can say that Parmanova with quite high 'image-ability' and has a strong legibility (Sasaki, 2000, p. 37)

The city of Rome was another legible city during Baroque period. According to Broadbent (1990, p. 40) the city was to be made legible to meet the visions which Pope Sixtus V had. The pope aimed at seeking a visual, architectural unity as an ecclesiastical coherence for the city. This was to be achieved through linking the seven major churches and shrines of Rome with roads (fig.2.7) by which pilgrims could make their circuits of them all in a single day.
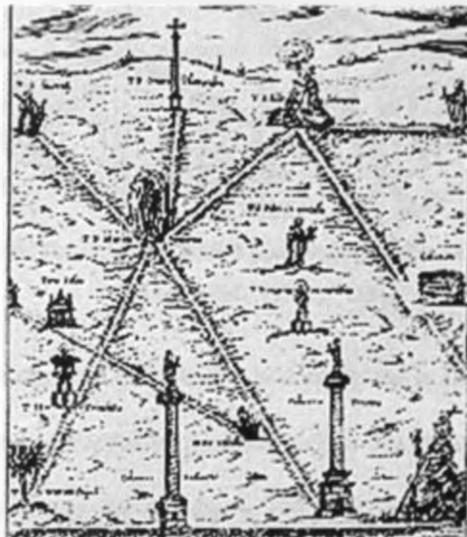
Figure 2.7: A Sketch showing connected Holy Places of Rome.
Source: (Broadbent, 1990, p. 40)

19th century witnessed legible cities being created through the concept of symbolism in urban planning. During this period architecture was being used as a symbol of power. Symbolic plan of New Delhi (fig.2.8) is an example of

17

such cities. According to Hall (1988, p. 183) this city was designed by Sir Edwin Lutyens who aimed at building visible symbols of authority and domination in India. The plan was disposed along a set of great axial avenues of baroque inspiration, with ample space for the display of military force and civil grandeur (Lynch K. , 1981, p. 20). From the acropolis on the heights of Raisina, the m

ain axis would run east to the ancient capital of Indrapat, symbolizing 'the keystone of the rule over the empire of India' (1988, p. 183)
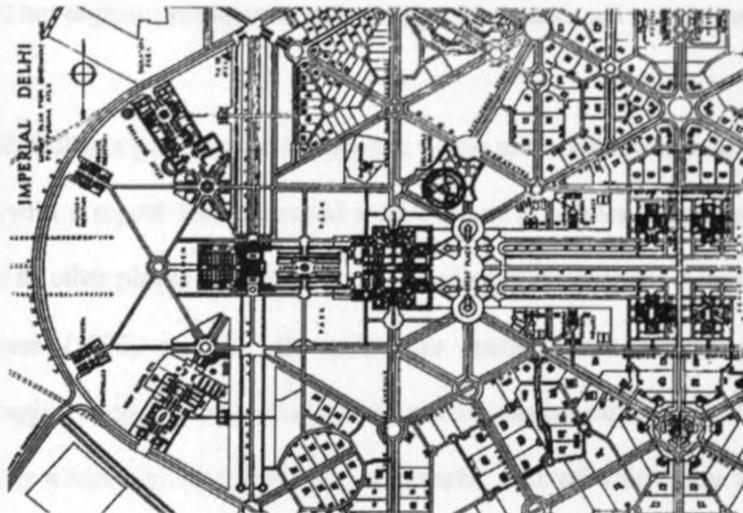
Figure 2.8: The Lutyens – Becker plan: symbolic plan of New Delhi.
Source: (Hall, 1988, p. 183)

In 20th century the concept of legibility was reflected in the concerns by urban designers to create aesthetically pleasing urban environments. Camillo Sitte (1843 – 1903) is among the designers. He laid down important qualities of plazas, streets, monuments and overall aesthetics for achievement of a legible behavioural space. According to him; (i) Centre for a plaza should be kept free and its shape should relate to surrounding buildings and landmarks to create views; (ii) Public squares should have clear boundaries and clear and distinct

uses; (iii) Streets should not be a means from one point to another but a place in themselves. They should also not continue infinitely but should be well defined and have clear "monumental" terminations; (iv) Monuments can take the form of statues and landmarks or can be an interesting or important building. They should also be used to punctuate views but not dominate the view. Furthermore monuments should be of appropriate size; (v) Concerning the overall Aesthetics, he embraces heterogeneity over the reductive planning systems like the grid, triangle and radial plan. He also champions instead the ordered but organic arrangement of buildings, landmarks and monuments.

In 1945, Cullen's proposal for Maryculter, a new urban village near Aberdeen, ended with a report that suggested a number of principles which could be applied to other places wherever a sense of identity is required. According to Broadbent (1990, p. 224) the principles included the following;- (i); Encouraging a sense of individual places, not to mention aiding navigation, by providing a network of recognizable landmarks, each of which may act as a rallying point for some particular function or some particular zone; (ii) Using the existing topography, and carefully planting, to encourage a sense of drama, thus providing memorable situations; (iii) Using carefully planned enclosures to provide a sense of locality and place (I am *here*); (iv) Leading people from one (enclosure) experience to another towards a climax, so that the unfolding drama itself will stick in the memory.

Kelvin Lynch (1960) became first analyzer of the urban scene in empirical terms in his *The Image of the City* (1960). For the first time Lynch (1960)

defined the term Legibility and went further describing some important concepts that fall under the concept of legibility. He is concerned with how we locate ourselves within the city, how we find our way around, and so on. According to Lynch (1960, p. 8) in order to know where we are within the city, we have to build up a workable image of each part with assistance of several key elements which come into play as we construct our images of the city. He identified them as paths, edges, districts, nodes and landmarks and called them elements of image of the city[7].

Furthermore he calls that quality in a physical object which gives it high, probability of evoking a strong image in any given observer' its imageability. This quality depends on shape, colour, or arrangement of the objects which facilitates the making of vividly identified, powerfully structured, highly useful mental images of the environment. According to Lynch (1960, p. 95) to heighten the imageability of the urban environment is to facilitate its visual identification and structuring. Lynch (1960) argues that, the elements of image above are the building blocks in the process of making firm, differentiated structures at the urban scale. He went further putting some hints of how a designer can heighten the imageability by inputting some special qualities[8] to the elements of image.

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[7] According to Lynch (1960) Paths are channels by which people move along in their travels. Examples of paths are roads, trails, and sidewalks. The second element, edges, is all other lines not included in the path group. Examples of edges include walls, and seashores. Next, districts are sections of the city, usually relatively substantial in size, which have an identifying character about them. A wealthy neighbourhood such as Beverly Hills is one such example. The fourth element, nodes, is points or strategic spots where there is an extra focus, or added concentration of city features. Prime examples of nodes include a busy intersection or a popular city centre. Finally, landmarks are external physical objects that act as reference points. Landmarks can be a store, mountain.
[8] Cited from Lynch (1960, p. 105)

Rossi (1982) advanced further the analysis of the urban scene in empirical terms. This is evident in the way he beefs-up the statement by Lynch (1972) which states that 'a desirable image of a city is one that celebrates and enlarges the present while making connections with past and future'. In connection to this statement, Rossi (1982) in his book '*The architecture of the city (1982)*' argues that, the city is to be understood not only as visible images and the sum of its different architectures, but also architecture as construction, the construction of the city over time. He went further to introducing the new methodology of understanding the city which is based on scales. In this system, cities should be understood at different scales from dwelling unit to urban scale.

Legibility Analysis

Legibility and identity studies of the urban environment where the community's perceptions of features, places, neighbourhoods, towns or cities are required provides information on how memorable positive features can be emphasised and celebrated or negative design features can be mitigated. Legibility analysis can also illustrate the degree to which urban form enhances or inhibits local and regional way-finding, a community's sense of identity and its contribution or role within a city.

The analysis combines a series of sketch maps drawn by users with interviews to build up a collective view of a neighbourhood, town or city. The five elements of image are typically identified and used to describe a collective view of the town, neighbourhood or city. Legibility analysis was first used by

Kevin Lynch in his book *The Image of the City*. It is sometimes known as 'cognitive mapping' or 'mental mapping' (Ministry of Environment, 2009).

2.3.3 Legibility of African Cities

In pre-colonial Africa, most of the cities tended to be structured "organically" around the palace and shrine as primary focal points (Stock, 2004, p. 244). During this period the concept of legibility was enshrined in the concept of formality whereby rulers of these settlements built their cities basing on cosmological considerations. For example, according to Osasona *et al* (2009, p. i), among the Yoruba Cosmological considerations demanded that the major routes to have an orientation to the palace such that they coincided with the cardinal points, with the east-facing one associated with Sango, the west one, Esu, the one to the north, Obatala, and the southward one, Ogun – all local deities.

Colonial period faced one singular incident that had the greatest long-term impact on transforming the ancient city in Africa. This was the advent of colonial administration. During this period, apart from other aspects, the colonial rulers aimed at creating cities with a particular sense. For example in Brazzaville according to Bernault (2000, p. 291) the colonial rulers did not content themselves with establishing monumental and military presence but they also sought to imprint spatial order and legibility on the city.

Urbanization during colonial era reflected a concerted attempt to control the form, size, and function of cities, and to achieve orderly development through the application of European town planning principles. According to Stock

(2004, p. 244) the grid pattern of streets, the central business district, and architecture of public buildings were all reminiscent of Europe. He further argued that other attributes of colonial cities reflected the particular concerns of Europeans living in Africa. Cities were deliberately and rigidly segregated on racial bases. Europeans, Asian and African living and working spaces were placed in separate parts of the city. Salisbury (now Harare), Lusaka, and Nairobi were designed to cater to needs of European settler population. The urban structure and architecture of these cities were very similar to those in Europe. For the sake of creating sense of a particular place, space was being used to express social distance and control the contacts between native and colonialist (Stock, 2004, p. 244).

After independence, the pace of urban population growth quickened. During this period, the modern African city looks very different from its colonial predecessor. Apart from size, there are important structural and functional differences. Formal racial segregation, one of the fundamental principles of colonial urban design, has been superseded by informal divisions[9] reflecting class structure of society.

Symbolism was incorporated in the design and planning of new cities established since independence. The port of Tema, developed as a focus for the anticipated industrial development of Ghana in the early 1960s. For new capital cities established in Lilongwe in Malawi, Yamoussoukro in Cote d'Ivoire, Abuja in Nigeria and Dodoma in Tanzania, their locations (away

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[9] These are social classes created by Africans who are now occupying areas used to be for Europeans, Asians and Africans.

from the old centre of power), their planned designs, and their social buildings were intended to evoke an image of hope for a brighter future (Stock, 2004, p. 244). For example according to Folkers (2010, p. 55), Dodoma town was characterized by organic development that guaranteed safety and would lead to a better society.

2.4 Urban morphological transformations and legibility of African Cities

Legibility of African cities is increasingly affected by transformations of their own kind. According to Moshi (2009, p. 21) most of African countries took up systematic round-ups and expulsions of undesirable urban dwellers as a way of addressing the emerging problems. He further argues that, as uncontrolled settlements spread on a far bigger scale; they threatened to overwhelm the functional urbanism inherited from colonial times when informal building was largely controlled.

These transformations are taking place within the already planned colonial urban settings as a result they change the spatial qualities which include the ten form qualities or the special qualities for an imageable cityscape by Lynch (1960). For example according to Nomico & Sanders (2003), Kouadio N'da N'Guessan[10] argues that,

> *"In Africa, in general, the CBD takes the form of a market place without any segregation of land uses, neither in terms of functions, nor in terms of inhabitants. In this space of great permissiveness and weak regulation, administrative buildings stand close to commercial buildings and hotels. The banks are found close to the small shops and carry the same weight as the saleswomen's stalls on the pavement. The 'African CBD's are indeed dominated by the informal sector and by the actions of the people, as in the case of Lome in Togo and Cotonou in Benin."* (Nomico & Sanders, 2003)

In connection with the above statement by Kouadio N'da N'Guessan, administrative buildings that stand close to commercial buildings and hotels

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[10] An architect and urban planner from Togo

results in the loss of functional continuity that could be achieved by buildings of the same function coming together.

The people's actions or informal processes in transformation are also witnessed in the city of Nairobi. Makachia (2010, p. 187) studied the so called 'Dweller Initiated Transformations' as categorised in the table (fig.2.14).

	ELEMENTS	BRIEF DESCRIPTION
Type A	The boundary Surface water drainage Landscaping Paving	This did not include work on the actual unit but included modifications
Type B	Finishes – external and internal Openings – modification / replacement Openings - burglar proofing Fittings – joinery	This was largely skin -based work on the provided unit
Type C	fusion Conjunction - reduction Intercalary space Subdivision Add in	These included internal spatial modifications or within the area of the provided unit in line with the combination and subdivision architectural strategies fronted by Osman's (1985) staged categories of transformation
Type D	Clip on Vertical addition Bridging Add beside	This refers to extensions

Figure 2.14: Dweller Initiated Transformations categories. Source: (Makachia, 2010, p. 80)

He observed four main characteristics of these transformations in Buruburu estate discussed under four headings as;- paths and location of extension, articulation of extension, typology of type 'D' DITs, technology in DITs

Under paths and location of extension he observed that, the spine road, Mumias South Road which was the main entry into Buruburu estate attracted 76% of type D'Dweller Initiated Transformations. Figure 2.15 illustrates this emerging character. The type 'D' involves vertical extensions which in some situations lead to loss in visual scope, distortion of skyline, singularity, dominance among other qualities.

He further argues that, the spine road, planned to site the major commercial functions, also lent itself to dweller-initiated extensions serving parallel

commercial and public functions. These extensions lead to loss in functional continuity.

Figure 2.15: View from commercial centre fronting the spine road into the dwellings
Source: (Makachia, 2010, p. 188)

Furthermore there is an increase in concentration of activities along this path. This is resulted by houses fronting the spine being extended to form a linear chain of commercial space along the spine. This space attracted activities such as kiosks for food, petty trade, and light manufacturing of furniture and car repairs that were located both on the road reserve space and within the on-plot on building setbacks. According to Lynch (1960) this concentration of activities along this path, heightens the dominance and singularity of this path.

Change of orientation and location of the entrances in relation to the public streets, the semi-private inner courts, and the more private dwelling units was one way of articulating extensions in this estate. For example the residential extensions along the spine road were accessed, not from the spine, but from inner streets. This change according to Lynch (1960) may result into loss of motion awareness to visitors.

Furthermore, the plot was an avenue to undertake transformations that were independent physically and functionally in Buru-Buru. Figure 2.16 is a photograph along Mumias South Road and shows the emerging streetscape of the extensions.

Figure 2.16: Extensions along Mumias South Rd.-'temporary' encroachments and 'permanent' storied types Source: (Makachia, 2010, p. 195)

Concerning the technology in Dweller Initiated Transformations, durability of materials was the matter. Extensions located within the plot were largely from durable materials, particularly if they did not serve for an ancillary function whereas those that encroached on the road reserve were makeshift and always of a 'temporary' nature (fig. 2.16). They included canvas awnings that formed the canopies, exclusively used for trade. Walling for such would be from timber off-cuts and/or *mabati* sheeting. The visual clarity and intensity becomes affected with these interventions on facades appearance.

2.5 Dar es Salaam

The history and nature of transformations in most of cities in Africa also characterises the city of Dar es Salaam in Tanzania. The issues related to architectural form of this city includes discussions on, land policy, (Kironde,

1994), land management, (Kombe, 1995), urban design, (Lupala, 2002) and transformations within informal settlements (Nguluma, 2003). The most closely to spatial qualities are by Christine Kohlert (2007) on restructuring of the harbour and dual planning method, Moshi, E. Z. (2009). Urban transformation: changing building types in Kariakoo was related by Swai & Deguchi (2009) and involved transformation of Residential Units into Commercial Spaces in the CBD. Policy and official interventions for Kariakoo is in its "Kariakoo Redevelopment Scheme, 2002" prepared by the Ministry of Lands and Human Settlements Development in collaboration with the Dar es Salaam City Council to guide the redevelopment of the area. These discussions are briefly summarised below.

Kironde (1994) in the study of the evolution of land use structure of Dar es Salaam (1890-1990) observes that the land use structure of Dar es Salaam was the result of various government policies. Kironde concludes that since land use policy was addressed to the interests of the minority, the majority opted to operate outside it creating a situation where the official land delivery process was inefficient due to adherence to inherited unrealistic and irrelevant rules and procedures. At the same time, the unofficial (informal) land delivery system was also inefficient for want of the necessary government intervention.

Lupala (2002) on his part classifies and describes the urban type of Kariakoo. With an urban design approach and focusing at block level, he observes that: the housing redevelopment in Kariakoo is characterised by the transformation of low rise Swahili houses into multi-storey apartment buildings and notes

that, "unguided high-rise constructions have resulted into poor spatial qualities in terms of ventilation, view, uncared for spaces between buildings and water and sanitation problems."

Moshi (2009) in his study showed that Kariakoo has dramatically transformed from a largely low lying single storey building fabric in the 1970s to an increasingly dense collection of multi-storey buildings developing within a tight and unchanging plot and street structure. Moshi argues that Kariakoo is not a product of professional planning and design concepts; rather it is a product of individually driven and often uncoordinated incremental changes. The study concludes that new approaches are needed to plan and coordinate the emerging individual efforts of change and such patterns as observed in Kariakoo.

The study by Swai & Deguchi (2009) aims to clarify the relationship that existed between traditional building functions and building components as well as to explain the way the change of building function relates to new space uses in the Kariakoo area. He observed that the change of building functions in Kariakoo has not only affected the building components but also that it has positively transformed the area in being place for both a living (residential) and working place (commercial) thus making Kariakoo an important hub in the city center. Of particular interest in this study is functional and visual transformation of buildings which are well addressed.

Kohlert (2007) focused her study on suggesting appropriate method that can be used in reconstructing Dar es Salaam's harbor zone. Basing on her

experience in the unplanned settlements, she suggested the so called dual method as an appropriate method. She argues that changes and developments can be discussed on a visual basis, which facilitates building consensus. The dual method also rests on analysis according to the space syntax method to produce rational, scientific evidence for architectural and urbanistic interventions. Of particular interest in this study, is the way the researcher analyses the structure of the city using space syntax. The study describes well the trend of structure transformation since the origin of the city.

As it is has been discussed in this chapter, the form of urban form provide this study a link to understanding the relations among the issue of urban transformation and legibility. Urban morphology study is an appropriate to studying transformations as they are perceived and not as a process.

Furthermore in under the section on legibility, Lynch became the main influence in this study. He showed that an urban form is made up of five elements of image. For these elements to evoke strong image, he discussed the important qualities they need and how can they be imparted in them. Since urban environments are not static, these elements may lose their qualities whenever the setting is subjected to change. This loss of legibility of a setting came to be shown by Klasander on her study in the concrete suburbs of Sweden.

Since history and nature of transformations taking place in African Cities differ from the ones in Europe or America, this study realised a need to show

how these transformations affect the legibility of African cities. In Africa, there are already many studies done on transformation of urban environments. Among them are studies by Anyamba (2006), Makachia (2010), Nomico & Sanders (2003), Moshi (2009), Kohlert (2007), Lupala (2002), Nguluma, Swai & Deguchi (2009 and 2007) and others. Among the studies on transformations carried out in Kariakoo area in Dar es Salaam City, Tanzania, there is no a single study that discusses the way these transformations have affected the legibility of this urban area. Therefore this study, apart from discussing transformations, it will go further to discussing their effects on legibility of Kariakoo area.

The study is going to apply the Lynch's model of legibility analysis with minor adjustments to fit it to African context in analysing the legibility of this area and urban morphological studies to discuss the transformations that take place in this area.

4.0 Conceptual Framework

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                    ┌─────────────────────────────┐
                    │   Urban Morphological        │
                    │   Transformations            │
                    │   Carmona et al., 2010; Moudon,│
                    │   1997; Bosselmann, 2008     │
                    └─────────────────────────────┘
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Urban Morphological Transformations
Carmona et al., 2010; Moudon, 1997; Bosselmann, 2008

Components of Analysis of urban form.
(Land use, Building structures, Plot pattern and Street pattern)

Moudon, 1997; Conzen, 1960

Elements of Image of the city.
(Paths, Edges, Districts, Nodes, Landmarks)

Lynch, 1960.

European and American cities

Urban Morphological Transformation in Durban.

Nomico et al., 2003

African Urbanism
Anyamba, 2006.

Morphological Transformations and Legibility of African Cities.
Stock, 2004; Bernault, 2000; Folkers, 2010; Osasona, 2009

Morphological transformations in Dar es Salaam and Kariakoo.
Swai & Deguchi, 2007 & 2009; Moshi, 2009; Kohlert, 2007; Lupala, 2002; Kironde, 1994

Dweller Initiated Transformations in Nairobi.
Makachia, 2010

Legibility of Kariakoo Area

African cities

32

3. RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the bases and processes used to carry out the research. It points out the instruments that were employed in selecting the study case and analysing its legibility and how conclusions are derived. It outlines how the research was designed and the overall study strategy which was adopted.

3.1 Research design

According to Yin (2003, p. 20), research design "guides the investigator in the process of collecting, analysing, and interpreting observations. It is a "blueprint" of research, dealing with at least four problems: what questions to study, what data are relevant, what data to collect, and how to analyse the results (Philliber *et al* (1980)[11]

The case study research strategy was used in conducting the study. Case study is defined by Yin (2003, p. 23) as "an empirical inquiry that seeks to understand a contemporary phenomenon in its real life context, especially when the boundaries between phenomenon and context are not evidently clear and in which multiple sources of evidence are used."

The main aim is to identify the unguided transformations that have taken place, location of transformed parts and qualities' (structure, identity and meaning) change in the resulted form and to know whether the resulted form and its new qualities make it easy for its users to recognize and organize its

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[11] Cited from Yin (2003, p.20)

significant parts into a coherent pattern. It involves finding out how users of this area, are able to move around easily, create mental maps of the area, recognize different parts and recognize the meanings contained in critical elements, organize different parts in a manner that can be easily understood by visitors and other users of the environment and the way they have responded to the adjusted setting through analysing changes in their way-finding abilities to cope with the changes that have taken place in that particular setting.

This was carried out by studying one case of formal/planned urban settlement that is undergoing unguided transformations. This area is Kariakoo in Dar es Salaam, Tanzania. In this settlement the transformation is very rapid and the owners, dwellers and investors have become the major players in the process.

The major themes in the study are physical setting including, buildings, streets and users and the interaction between them. This focus demands a direct encounter between researcher and residents and other users of the environment. According to Alcock *et al* (1985), legibility is important at two levels: physical form and activity pattern. In this kind of research, an in-depth study of the behaviour of the people in way-finding activity in their environment and the opportunities the environment offer them support in their activity, through evoking meanings, its parts being easily identifiable, and its clarity of structure despite of transformation that has taken place. It needed analysis of public or group images and documentation of changes that have taken place in that particular physical setting. Such study calls for qualitative approaches.

For documentation of transformations that have taken place on the physical form of the area, reconnaissance surveys and archival analysis were done. First of all, pilot study to know the physical boundaries of the area of study and its neighbouring surroundings, actual field survey to document the transformed parts in terms of appearance, location and the resulted form. For legibility analysis at Physical form level, field reconnaissance was done for production of physical map of the area and lastly was gaining public images /activity patterns through interviewing the long lived residents in the area and make actual field trips together with them. All this material are finally synthesized in a series of maps and reports which give the basic public image of the area, the general visual problems and strengths, the critical elements and element interrelations, with their detailed qualities and possibilities for change.

3.2 Choice and Justification of research strategy

The selection of a research strategy is very important for it may affect the validity and reliability of data. According to Lerise (1996, p.198)[12] "a properly selected research strategy has real life practical value". Therefore, the choice of a method is determined by a number of factors, which include the purpose of the study, the nature of the information required and the availability of resources.

The selection of a case study strategy is justified by the nature of the research problem, objectives and research questions. In this study the focus is on the transformation of physical and activity patterns of a particular environment. It entails transformation of buildings, streets, the total physical layout and concentration or change of activities in some image elements, and its

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[12] Cited from Nguluma (2003, p. 68)

outcomes on way-finding activity. Three types of questions are answered in this study; these are of "what", "where" and "how" type. The appropriate questions are therefore as follows;- First question is of "What" type- What transformations have taken place?" this will be answered by recording the quality of physical setting and changes that have taken place in this particular environment. According to Yin (2003, p. 6) if research questions focus mainly on "what" questions, either of the two possibilities arises. First, some types of "what" questions are *exploratory* ... The second type of "what" question is actually a form of a "how many" or "how much" line of inquiry. Identifying such outcomes is more likely to favour survey or archival strategies than others. Since identification of types of physical changes like forms of buildings, demolitions, extensions and alterations among other changes, that have taken place is the concern here, the first type of "what" question will be appropriate for this study.

Another question is the "where" type - where are the transformed parts located?" Here the main concern is to identify exact location of places where the transformation has taken place in a physical environment. According to Yin (2003, p. 6), "who" and "where" questions (or their derivatives-"how many" and "how much") are likely to favour survey strategies or the analysis of archival records, as in economic research. Final question is the 'how" type - how are the conditions imageability of this landscape before and after it has undergone transformation? Here the concern is to look at means of carrying way-finding activity before and after transformation, and the changes in the ways the environment supports the way-finding activity in response to transformation that has taken place. According to Yin (2003, p. 7), "how" and

"why" questions are more *explanatory* and likely to lead to the use of case studies, histories, and experiments as preferred research strategies. The focus, therefore, is a combination of exploratory and explanatory accounts towards identifying, locating and understanding outcomes of the urban transformation in legibility

3.3 Choice and Justification of the Study Cases: Why Kariakoo?

There are important factors to be considered during selection of case study area. According to Patton (1987) and Flyvberg (1999)[13] the selection should take into account cases which are information rich. Information rich cases are those from which one can learn a lot about the issues that are in the study focus. Patton (1987)[14] states that:

> *Cases become particularly useful where one needs to understand some particular problem or situation in great depth, and where one can identify cases rich in information, rich in the sense that a great deal can be learned from a few exemplars of the phenomenon in question* (Patton, 1987).

In this study a case study area considered to be information rich is selected. Dar es Salaam is considered an appropriate area for this particular study because it is the largest urban agglomeration in Tanzania and is one of the rapidly urbanizing cities in the country.

The selection of Kariakoo as a case study area is due to fact that, it is a planned urban settlement which is undergoing unguided transformations at higher rate than any urban settlement in Dar es Salaam. It also has long history of being an African accommodation in Dar es Salaam city since colonial times. This makes it to be a good source for studying African urbanism nature and its transformation practices. Furthermore there are a number of studies

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[13] Cited from Nguluma (2003, p. 69)
[14] Cited from Nguluma (2003, p. 69)

(refer to page.28 of this report) conducted in this area that can be used as a source of evidence in this research.

3.4 Qualitative versus Quantitative analyses

According to Kothari (2004, p. 3), Qualitative research, is concerned with qualitative phenomenon, He further argues, attitudes or opinion research is a research designed to find out how people feel or what they think about a particular subject or institution. On the other hand, quantitative research is generally concerned with measurements and is characterized by a more structured and standardized data collection Gilham (2010, p.10)[15]. Basing on the descriptions above, this study is purely qualitative since it focuses on ability of users to find their ways in a particular setting and the way the setting supports their way-finding activity.

3.5 Research Procedures

Yin (2003, p. 78) states that "data collection for case studies rely on many sources of evidence like documentation, archival records, interviews, direct observation, participant observation and physical artefacts". He further notes that there are other source of evidence like films, photographs and videotapes. The study was conducted in three parts. Part I entailed activities such as (i) contacting necessary authorities so as to seek permission to visit and conduct actual fieldwork in the targeted areas. I acquired a letter of introduction (appendix 1) which I used it together with another letter (appendix 2) which I wrote to the Directors of Ilala City Council in order to seek permission to conduct the study in Kariakoo area which is under this Municipality. I got response letter (appendix 2) which allowed me to conduct studies in the area.

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[15] Cited from Nguluma (2003, p. 67)

(ii) contacting and/or visiting the authorities to seek archival materials and other information for study. Part II entailed field reconnaissance and doing observations in the areas. And part III was detailed interviews part and actual field trips by group of interviewees and an interviewer.

2.6 Research Tools

Various research methods were employed in the course of conducting this study. Data collection tools included;-

3.6.1 Archives

According to Yin (2003, p. 88), for many case studies, archival records-often taking the form of computer files and records-also may be relevant. According to Zeisel (2006, p. 311), E/B researchers find themselves in a situation where there is no any source of data as when they study historical problems or past events about which they can neither interview participants nor observe behaviour. He therefore argue that, for *historical topics* that cannot be studied through methods such as direct observation and interview, archives may be the only available source of data (Zeisel, 2006, p. 313).

This study requires exploration of the past state of legibility of Kariakoo area. (Refer to objective (i) on page 5). In so doing, past physical condition of the setting was studied.

In order to explore the past physical condition of Kariakoo, some archival materials were to be found. I visited Dar es Salaam city council, Antiquities and TNA departments where I wasn't able to get the required information. So I was forced to rely much on information from literature by Ezekiel Moshi and Brennan & Burton from which I got some photos, sketches and descriptions of

the past physical condition of the area. Mohamed Said article also provided me a good description of the past physical condition of the area.

3.7.1 Direct observations

According to Yin (2003, p. 92) by making a field visit to the case study "site," you are creating the opportunity for direct observations. Assuming a certain phenomenon have not been purely historical, some relevant behaviours or environmental conditions will be available for observation. Such observations save as yet another source of evidence in a case study.

Direct observations were done during field reconnaissance and actual field trips. Field reconnaissance was done in order to explore the current physical condition and structure of the area. It was done by trained observers carefully selected by the interviewer. The observers included one architecture student from University of Nairobi, a long lived resident and local administrator in Kariakoo and another was a graduate architect who is practising architecture in Tanzania.

Actual field trips were also conducted whereby, a few subjects (fig.3.1 and 3.2.) were taken out to special locations, making brief trips involving the elements of image while describing and discussing them on spot.

Figure 3.1: Actual field trip team just before starting a trip.

Photo by author in 2012

Figure 3.2: Actual field trip during a trip at Jangwani.

Photo by author in 2012

3.8.1 Physical artefacts

The important things to be observed according to Yin (2003, p. 96) are physical or cultural artefacts. This is a technological device, a tool or instrument, a work of art, or some other physical evidence. Such artefacts may be collected or observed as part of a field visit. For this study, observation of physical artefacts was done in order to be able to identify the transformed parts. Here photos of elements of image were taken together with any physical condition that could influence legibility of this area.

3.9.1 Observations of physical Traces

According to Zeisel (2006, p. 159), observing physical traces means; systematically looking at physical surroundings to find reflections of previous activity that was not produced in order to be measured by researchers. Traces may have been unconsciously left behind (for example, paths across a field), or they may be conscious changes people have made in their surroundings (for example, a curtain hung over an open doorway or a new wall built).

Some traces were found. These included the used to be church building along Uhuru Street, which is no longer a church. The building was changed its function but its form has remained the same.

Before starting interview, a brief analysis of maps was done. The model of analysis by Alcock *et al* (1985, p. 47) was adopted with minor modifications. This analysis helped in physical identification of the affected elements, thereby dictating the choice of appropriate paths/ routes, standard Origins and destinations for different actual field trips routes and structure appropriate questions to ask the interviewees during the imaginary and actual field trips.

3.10.1 Focused Interviews

According to Yin (2003) one of the most important sources of case study information is the interview. A focused interview is where a resident is interviewed for a short period of time during which interviews may remain open-ended and assume a conversational manner (Zeisel, 2006, p. 227).

Legibility analysis study, according to Lynch (1960, p. 155) involves the mass interview of a large sample, balanced to match the general population characteristics. This group, which could be interviewed simultaneously or in several parts, would be asked to draw quick sketch map of the area in question, showing the most interesting and important features, and giving a stranger enough knowledge to move about without too much difficulty; Make a similar sketch of a route and events along one or two imaginary trips; Make a written list of parts of the city felt to be most distinctive; put down brief answers to a few questions of the type: "where is---- located?. However in the process of creation of sketch map by individuals, it is advised to put some kind of guidance to them. According to Alcock *et al* (1985, p. 48) it is often useful to provide a standard Xeroxed sheet showing some important nearby features.

Open-ended questions were very useful in testing the imageability of the environment whereby individuals were being asked to locate already selected critical elements and discuss their feelings and memories about them.

A group of twenty (20) people was selected from Kariakoo area. This group was comprised of five (5) respondents selected from each of the four Sub-districts of Kariakoo namely Kariakoo, Gerezani, Mchikichini and Jangwani. They were asked to draw sketch maps on Xeroxed papers (Appendix 8) that

were given to them during the interview. They were also asked to indicate most interesting and important features in the area in their mental maps (Appendix 7), giving a stranger enough knowledge to move about without too much difficulty. Just aside the same Xeroxed papers, they were further asked to make a similar sketch of a route and events along one or two imaginary trips (Appendix 7).

In groups of at most five people, (fig.3.3) or as individuals (fig.3.4) they were provide provided with recording sheets (Appendix 6) or the interviewer helped them to record list interesting and important features in the area. They were also required to briefly describe the boundaries of the parts of Kariakoo, felt to be most distinctive and put down brief answers to few questions.

Figure 3.3: A group interviewed at space outside Kariakoo ward executive officer's building.

Photo by author in 2012

Figure 3.4: An individual interviewed along Somali street.

Photo by author in 2012

3.11.1 Questionnaires

According to Zeisel (2006, p. 257) standardized questionnaires are used to discover regularities among groups of people by comparing answers to the same set of questions asked of a large number of people.

For the sake of getting views from other stakeholders including beneficiaries of legible city projects, some questionnaires were devised. These were supplied to the following; (i) First questionnaire (Appendix 5) was directed to Director of Dar es Salaam City Council planning Authority. The concern here was to know if there are any policies or/ and guidelines that control the spatial transformation for creation of legible urban environment in Tanzania and to know the level of their enforcement. (ii) Second questionnaire (appendix 4) was supplied to the Director of Antiquities department in the Ministry of Tourism and Culture. The focus was to know the presence of buildings, spaces, streets or any physical object of historical/political or cultural value which are under conservation order in area. Also it had another concern of knowing the existence of guidelines or conservation orders and their state of enforcement in Kariakoo area. Furthermore, it had an intention getting information on the way the Ministry is striving to reinforce and consider the monuments as touristic attractions in the area. (iii) Third group of questionnaires (appendix 3) was supplied to shopkeepers for the sake of gaining public image. This aimed at getting information on how these shopkeepers direct their customers or visitors in their business premises.

3.12.1 Methodological encounters

In the course of conducting this study a number of constraints have been encountered. These are mainly administrative procedures and willingness of respondents to give information. Archival materials about the past spatial condition of Kariakoo could not be accessed from the TNA department library, partly due to time limitation, among other factors. I therefore, relied upon the secondary information from literatures by other authors on Kariakoo. On the part

of respondents, a few were not willing to allow us to take photos of their buildings. There was a need of seeking Local Government administrators to help us. The focused interview was a very demanding activity. Most of respondents are old people who were getting tired in the midst of the interview, so we had to have some breaks in between before we could continue with the exercise.

Directors were delegating the work of filling up the questionnaires to other people under their authority (fig.3.5)

Figure 3.5: 'Memo' written by one of the Directors to request assistance from another person. Photo by author in 2012

4.   STUDY AREA

This chapter offers a chronological description of morphological transformations that have taken place in Dar es Salaam city centre and in Kariakoo area. It also highlights on the effects these transformations have posed on legibility of the city and on Kariakoo built environment.

4.1 Dar es Salaam City

Dar es Salaam city is situated on the Eastern Indian Ocean coast of Africa. It was first imagined by Sultan Majid of Zanzibar in 1862. It is a Tanzania's largest city with a population estimated to be over three million and is among largest cities in Africa (fig.4.1) which is growing at a growth rate of 4.3% according to the 2002 Census1 (Moshi, 2009).
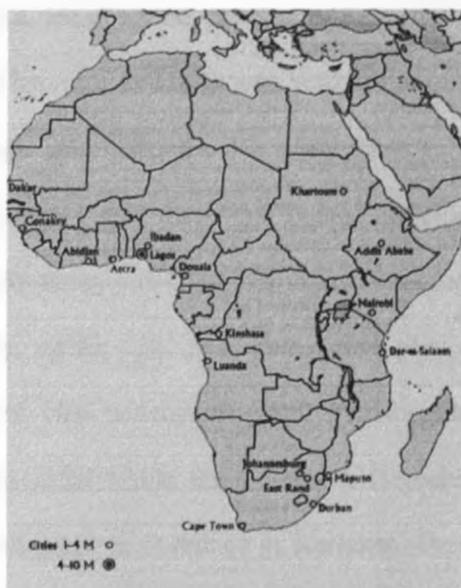
Figure 4.1: Map of Africa showing Dar es Salaam among large cities of
Africa in 1990.

Source: Gugler, J (1996, p. 210) in Moshi (2009)

Dar es Salaam's urban form is a result of many factors. Among them are its geographical location and colonial occupation within the city. The presence of natural harbour in Dar es Salaam is among the factors that dictated its location.

Also it was an advantage to the Germans to develop facilities such as port houses, light house, control tower, and bonded warehouses to support the exploitation systems. Furthermore the Arabs, Germans and the British colonialist influenced architectural aspects such as building elements, typologies, street patterns and planning policies and regulations.

4.2 Morphological Transformations in Dar es Salaam city Centre

These are discussed under five variables namely; land use, building structures, plot pattern, street pattern and other features that affect legibility of the city. Concerning the transformation on land use structure of Dar es Salaam city centre, (Kironde, 1994) discusses it as it is influenced by various government policies. Lupala (2002) sheds some light on transformations of building structures and plots. He observed that Dar es Salaam is characterised by the transformation of low rise buildings into multi-storey buildings within plots which also undergo some changes. His view came to be agreed by Moshi (2009) who discovered that there are indeed developments of low rise buildings into multi-storey buildings, but since 1970s the developments have been taking place within tight and unchanging plot and street structure. Building structures also undergo physical transformations as a result of functional transformation within them. Swai & Deguchi (2009) discuss this situation as it takes place in buildings in Kariakoo. Furthermore concerning the transformations of Street pattern , Kohlert (2007) and (Swai & Deguchi, 2007) provides a thorough understanding of transformations that take place on Dar es Salaam's spatial structure and architecture of its buildings whereas Lupala (2002) and Moshi (2009) discuss also other features such as

concentration of activities along streets that are also transforming in Dar es Salaam.

4.2.2 Land uses

The present land use structure for Dar es Salaam and house types in the city centre have been much influenced by early colonial planning. Under Sultanate, Dar es Salaam was structured in three concentric zones – at its centre, the stone buildings of administration and business nearest to the harbour along what is now Sokoine drive; beyond this, *shamba* fields; and finaly outlying Zaramo and Shomvi villages (Brennan & Burton, 2007, p. 21).

Later during the German colonial administration the 1891 building regulations became a road map to transforming the city structure of Dar es Salaam. The City was divided into zones where various standards of buildings were applied in their development. Swai and Deguchi (2007) describe the strcture of the city as follows;

> *the structure of the city was a pie shaped sectors rather than concentric belts. The city evolves around the city centre core. This core is the harbour of Dar es Salaam. Surrounding the harbour are central Business District (CBD), industrial areas, residential areas, transportation belts, parks, schools and sport grounds. Industry is to the north, and a in a governmental sector is to the east. Each of these zones form piece of the pie that is next to the harbour core* (Swai & Deguchi, 2007, p. 6)

Swai and Deguchi (2007, p.7) further argue that, early layout for Dar es Salaam was also set in triangular pattern (fig 4.2) to achieve militaristic strategies and later development of the street patterns consisted of three different features: Triangular pattern, Grid pattern and Round about (fig 4.3)
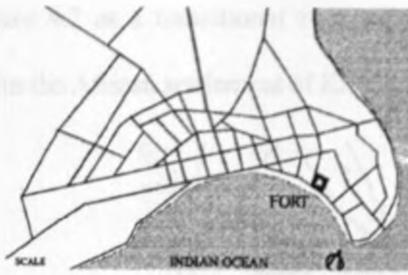
Figure 4.2: Triangular and Grid pattern of
street network. Source (Swai & Deguchi,
2007, p. 6)

Figure 4.3: Triangular, Grid pattern of
street network with round about. Source:
(Swai & Deguchi, 2007, p. 6)

In1914, the Germans introduced zoning by spatially organizing the city along

racial lines. According to Wilt de Boer[16] the city was laid out according to the

German Building Ordinance and was subdivided into three zones (fig 4.4).

Figure 4.4: The 1914 *'Bauordnung'* Dar es Salaam.
Source: TNA 12589/11, Dar es Salaam Township Layout in Brennan *et al* (2007, p. 102)

Zone I was for "European Residential Quarter", Zone II, was the

"Commercial as well as Indian Quarter", and Zone III was the residential area

(fig.4.5) for natives where simple structures were allowed. They also

introduced the so called *Cordon Sanitaire* (now Mnazi Mmoja open space) in

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[16] Cited from Moshi (2009)

figure 4.7 as a transitional zone separating the European and Indian zones from the African settlement of Kariakoo.

Figure.4.5: Dar es Salaam in 1916 (Kariakoo area marked) Source: (Wilt de Boer 1984:29) in (Moshi, 2009, p. 34)

In 1923 the British administration systematically started to relocate inhabitants from the Mnazi Mmoja open space to the purely African quarters of Kariakoo and Ilala (Sutton, 1970). The zone (fig.4.6) was then reserved for non-European sporting purposes.

Figure 4.6: The separation – Mnazi Mmoja Park in 1935.
Source: (Kohlert, 2007, p. 7)

Independent government developed master plans for central area development. Among them is that of 1979 on fig. 4.7 with some guidelines in the table in fig. 4.8. This master plan has been a road map for many transformations and new developments that are taking place in Dar es Salaam as most of the developments after this plan are in accordance to it.
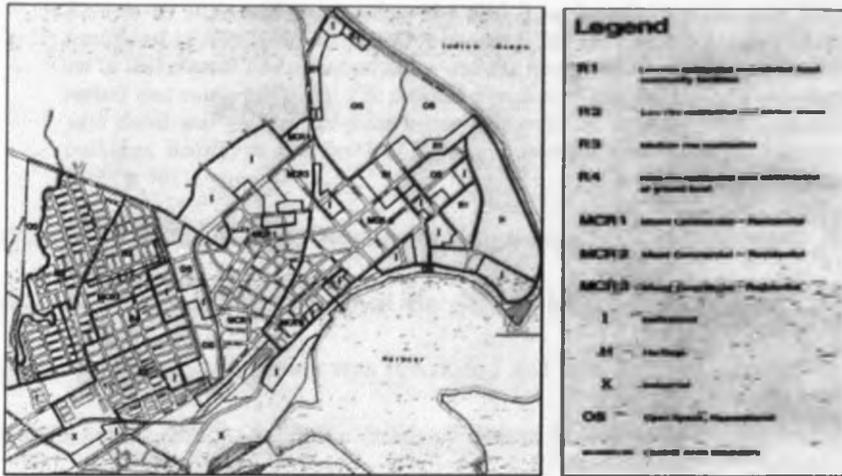
Figure 4.7: Central Area Zoning Plan (1979). The master plan recommended several zones each with different redevelopment guidelines as indicated in Table below. Source: (URT, 1979, p. 89)

Zone	Type of use	Floor Area Ratio (FAR)	Site coverage (%)	Max. building height (feet)
R1	Low rise residential and related local community	0.5	30	30
R2	Low rise residential and corner shop;	0.5	50	10
R3	Medium rise residential	1.0	50	30
R4	High rise residential and commercial at ground level	1.0	50	50
MCR1	Mixed commercial residential	2.0	66-70	50
MCR2	Mixed commercial residential	1.5	66-70	80
MCR3	Mixed commercial-residential	2.0	66-70	120
I	Institutional	1.0	50	70
H	Heritage	-	-	30
X	Industrial	1.0	60	20
OS	Open space recreational	-	-	10

Figure 4.8: Source: Dar es Salaam Master Plan (1979:91).

4.2.2 Building structures

During the Arabs/Islamic period under Sultan Majid, most of Key buildings were for administrative, religious and public social purposes. They included Sultan's palace, domed mosque, and a social building (now Old Boma) in figure 4.9 (Sutton, 1970, p. 3) . Other buildings had shops at the front and

residential spaces at the back. In case of multi storey buildings, the ground level was specifically for commercial activities while the first floor was for residential purposes (Moshi, 2009, p. 32). Casson in (Moshi, 2009, p. 30), describes the Islamic architecture and its elements using the old Boma building:

> *Both in its style and construction, the Old Boma include a number of features traditional of East African coastal architecture. The thick walls are of coral rubble set in lime mortar and plastered white, and the floors are of coral blocks laid on cut rafters and mangrove poles. The pointed crenellation and the carved entrance door with floral and geometrical pattern can be paralleled in other nineteenth century buildings, notably at Zanzibar and Bagamoyo towns (Casson 1970:181) in (Moshi, 2009, p. 30).*

Functions in some of these Arabic buildings have been transforming since then. These include one of Seyyid Barghash's buildings in Dar es Salaam (1860s) on figure 4.10 which was renovated and now accommodates offices for Ilala Municipality. After the death of Sultan Majid in 1870, the building and town planning projects were abandoned, land and property values slumped, and the streets became overgrown with grass and bush (Sutton 1970, p. 5).

Figure 4.9: The Old Boma in 1860s
Source: (Lupala, 2002, p. 37)

Figure 4.10: One of Seyyid Barghash's buildings in Dar es Salaam (1860s).
Source: (Sutton, 1970, p. 23)

Later in 1890s the German colonial administration took over Dar es Salaam and in 1914 they brought a building ordinance in which they introduced three development zones for Dar es Salaam. Basing on this ordinance they set

standards to which all new buildings in each zone would conform. This resulted to varying standards of buildings in these zones.

Zone 1

This zone was set for Europeans accommodation. It had two subdivisions namely; the administrative and residential areas. The administrative area until early 1960s was characterised by predominantly low-rise office blocks of two to three storey buildings. Religious and institutional buildings such as churches and schools were also built in this zone. According to Moshi (2009) in this area the Germans constructed new buildings such as administration building on the Kivukoni sea frontage and two churches, the Azania Lutheran church along Kivukoni Front (fig. 4.11) and the St. Joseph Roman Catholic church along Sokoine Drive (fig. 4.12). After independence a number of new office buildings have been built some with more than ten storeys.

Figure 4.11: Azania Front Lutheran Church. Source: (Sutton, 1970)

Figure 4.12: St. Joseph Roman Catholic Church. Source: (Moshi, 2009, p. 36)

This area transformed further during the British occupation period whereby more buildings were added to this European area. Among the buildings is New Africa Hotel (fig. 4.13 and 4.14).

Figure 4.13: New Africa Hotel during the British period. Source: Msemwa *et al* (2005, p. 23)

Figure 4.14: View of the current New Africa Hotel on the same site. Source: Msemwa *et al* (2005, p. 23)

During early post-colonial period some buildings such as Kilimanjaro Hotel along Kivukoni Front on figure 4.15 were constructed. This building replaced two German period buildings. This building originally had balconies but later were removed and its facade was covered with glass.

Figure 4.15: Kilimanjaro Hotel. Source: (Moshi, 2009, p. 41)

Second part of zone II was behind the administration area. This was the residential quarter for German officials. Buildings in this section had special character as stipulated in the Germany Ordinance of 1914. Sutton describes it as follows:

> *Behind this administration there grew in time residential quarter for German officials. Here were spaciously erected fine villas, raised above ground level and mostly double storeyed with thick whitewashed stone walls airy rooms and verandahs. This whole area – along the planned streets, between the villas, as well as the empty spaces – was treated as one large botanical garden. At its eastern edge facing the ocean was the Governor's residence (presumably the present state house) and to the north of that the equally impressive Government European (now Ocean*

Road) Hospital. Building in this area continued in the British and independence periods. Yet it retains much of its old character as a civil service residential quarter, bounded to the north by the golf course established in the 1920s. (Sutton, 1970:11)

Figures 4.16,4.17,4.18 and 4.19 show respectively the spacious villas, a Government European Hospital (now Ocean Road Hospital) as it is seen today, the Governor's residence (now the State House) during German era and the current State House as reconstructed by the British administration in 1922. According to Lupala (2002) nowadays to a greatest extent development in this area is in accordance with the conditions stipulated in the 1979 Master Plan especially for the new buildings.

Figure 4.16: German residential buildings.
Source: (Moshi, 2009, p. 35)

Figure 4.17: Ocean Road Hospital
Source: (Moshi, 2009, p. 35)

Figure 4.18: The Governor's residence
(German period). Source: Sutton 1970:
Plate 32 in (Moshi, 2009, p. 35)

Figure 4.19: The current State House.
Sources: www.kikweteshein.com

During the post-*ujamaa* period to date new structures, mainly offices and institutional buildings, have been replacing some of the old German residential houses. These include PPF tower, International House, and a number of Embassies (figs. 4.20 and 4.21) (Moshi, 2009).

Figure 4.20: International House. Source: (Moshi, 2009, p. 43)

Figure 4.21: PPF tower. Source: (Moshi, 2009, p. 43)

Zone II

This was the commercial and shopping centre. With compact layout, the zone was predominantly characterised by three to five storey commercial-cum-residential apartment blocks. Simple-style houses from solid materials were being allowed in this area (Kohlert, 2007, p. 3). Recently blocks of offices in modern international style (fig. 4.22) have been built covering many of the otherwise open spaces and others replacing old buildings. These new developments according to Lupala (2002) in this area are in accordance with the conditions stipulated in the 1979 Master Plan.

Figure 4.22: New buildings within the former Indian area. Source: (Moshi, 2009, p. 43)

Zone III

During the German colonial administration, this area was set as a residential area for natives where simple structures (fig.4.23) built from any material were allowed and there were no development controls for this area. In this area single storey Swahili residential houses were being constructed in a compact grid layout plan.

Figure 4.23: Simple structures in the Native Town of Dar es Salaam (Kariakoo), circa 1905.

The predominated single storey-Swahili houses survived beyond the British period into postcolonial period. After independence, some commercial residential (Indian type) buildings were put up along Uhuru Street (fig. 4.24), Msimbazi Street, Nkrumah Street and around the market (Moshi, 2009, p. 38).

Figure 4.24: Existing Indian Type Buildings in the former Indian Area. Source: (Moshi, 2009, p. 38)

New buildings of functional and international style were constructed in parts of Kariakoo and Indian type buildings in Kariakoo area since the early postcolonial period till the *Ujamaa* period (1961 – 1971). Later there came the stagnation of building activities in the city centre which continued until the *post-ujamaa* period when the trend reversed through increasing private initiated construction activities. From post-*ujamaa* period to date or the economic liberalisation period construction of new buildings of functional and international style has accelerated in parts of Kariakoo as we shall see in the next section of transformations in Kariakoo area.

4.2.3 Plot pattern

Since Dar es Salaam was not subdivided into plots during the Arabs, transformations were affecting the zones. The zoning and subdivisions of plots started with the Germans. These plots transformed much especially in a period after independence as a result of new regulations and plans like the 1979 master plan, which were being set by the independent government. For example in Zone III Plot sizes were at average of 12 by 15 metres (180 square metres). According to Lupala (2002) the small plots existed are being amalgamated or combined to form bigger plots covering up to 4,992 square metres whereas in Zones I and II, plot boundaries are not very much changing instead plot coverage is what changes most.

4.2.1 Street pattern

Dar es Salaam's coherent urban character had completely disintegrated by 1890 (Vorlaufer 1970)[17]. The Germans improved the path system and

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[17] Cited from (Kohlert, 2007, p. 3)

structure. Figure 4.25 shows the city map of 1891 that represents the very first outline after the city as re-constructed by the Germans.
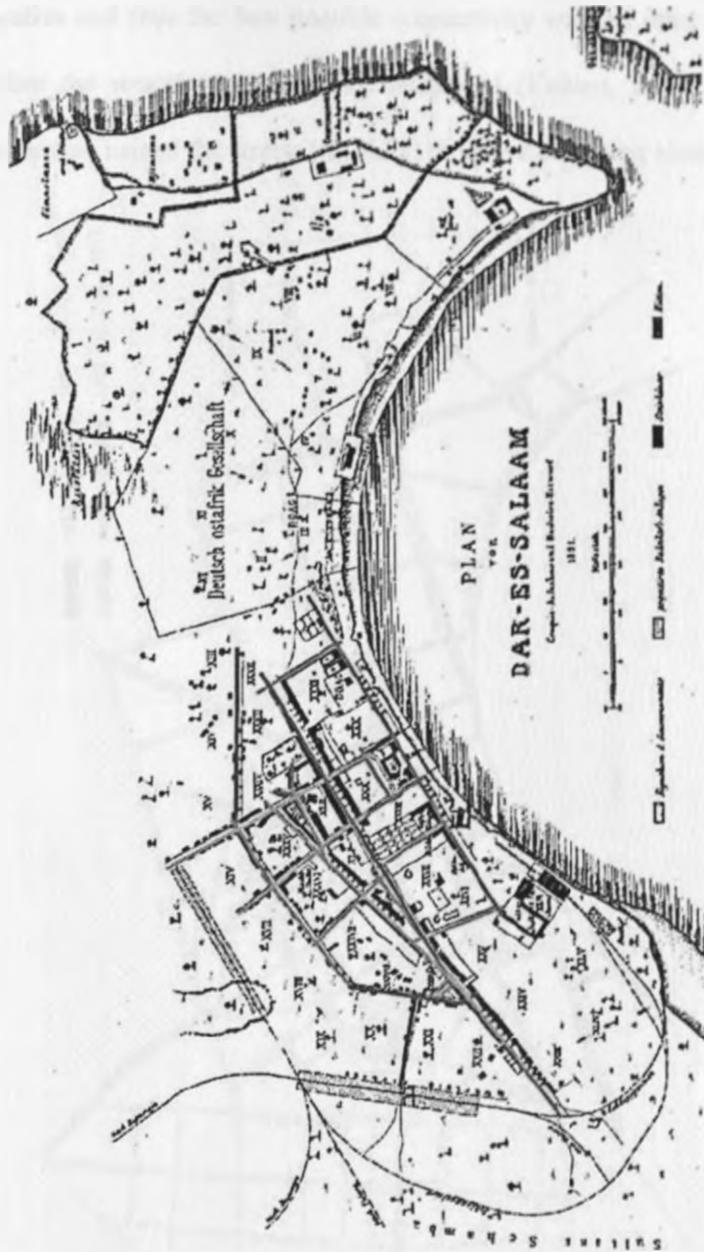
Figure 4.25: City map of 1891 showing the very first outline of the city.
Source: (Kohlert, 2007, p. 5)

The lines visualize the first streets of the small core settlement with the red colour for the most integrated street, orange for the second-most important,

and so on until we arrive at cold shades such as green or blue for the least-important streets. In this figure, the main street shows the highest level of integration and thus the best possible connectivity with all other streets and therefore the structure became well integrated (Kohlert, 2007, p. 4). The Germans also named the streets (fig. 4.26) to give them strong identity.
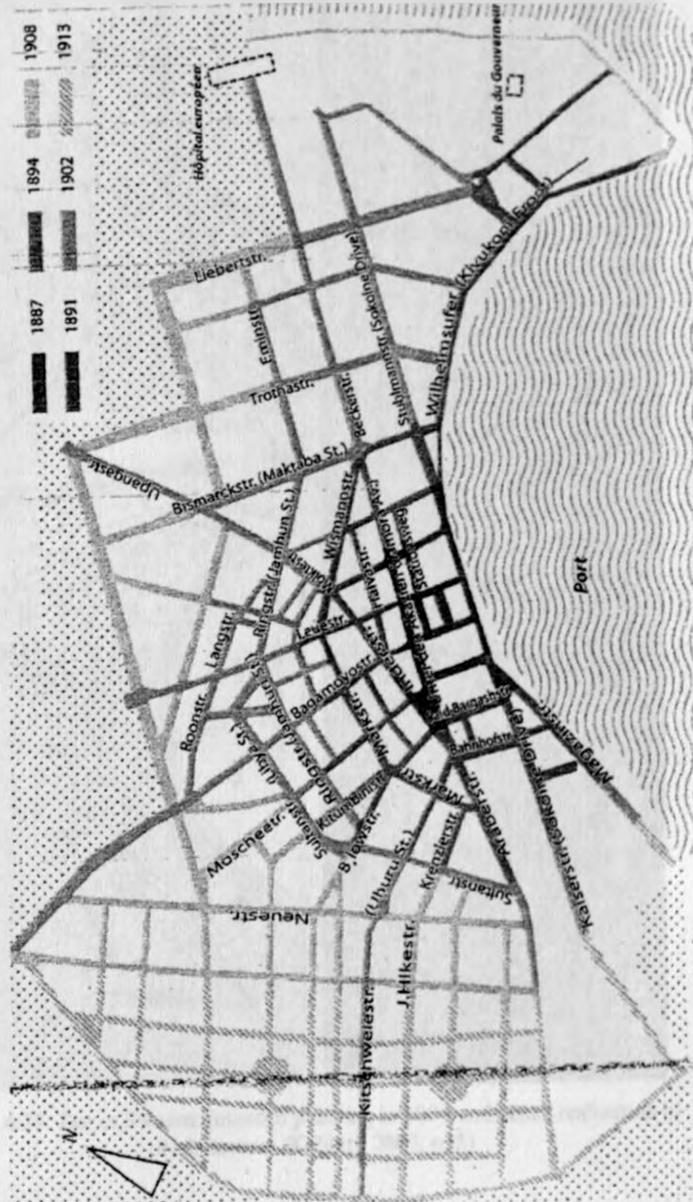
Figure 4.26: The Street names of Dar es Salaam city between 1887 and 1914

Source: (Raumbault, p. 29)

The 1914 map (fig. 4.27) visualizes German planning at the end of the colonial period. According to Kohlert (2007, p. 5) few streets have sufficient connectivity and global integration is quite bad.
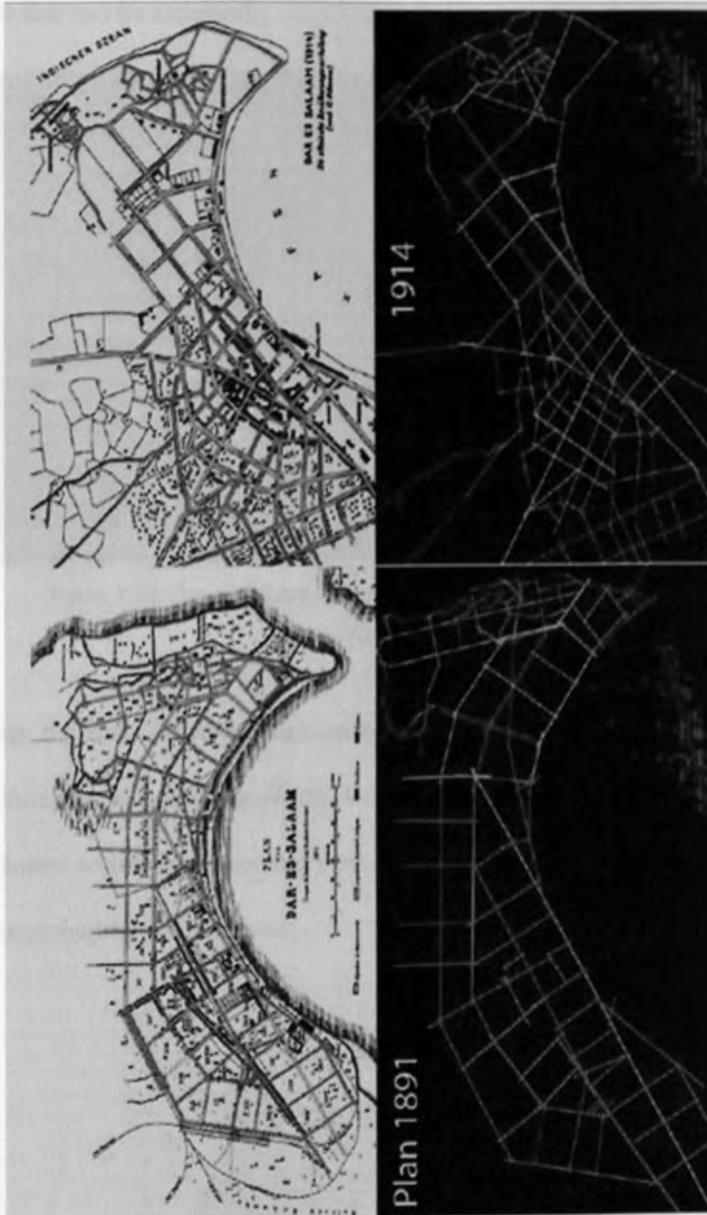
Figure 4.27: Dar es Salaam: intended planning in 1891 and actual realization in 1914. Source: (Kohlert, 2007, p. 5)

In 1916 the British took over Dar es Salaam and started to strengthen the structure of Dar es Salaam city after distortion. According to Kohlert (2007, p.

6) they extended the interconnecting roads and formed several smaller access roads, constituting a closed road network with a deformed wheel structure (fig.4.28) and the core area as the hub forming a closed net of well-integrated roads that can be accessed.
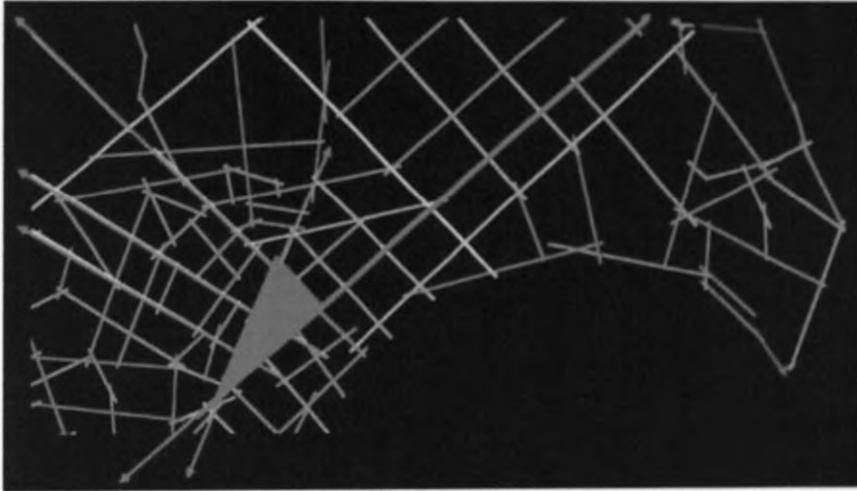
Figure 4.28: Dar es Salaam 1920: the deformed wheel structure – the hub.
Source: (Kohlert, 2007, p. 6)

During the early independence period Kariakoo had spread, and the net-like structure continued. In the North, large and relatively isolated housing estates developed with few connecting paths between individual residential streets, as the axial map (fig.4.29) shows.

Figure 4.29: Axial map in 1979. Source: (Kohlert, 2007)

Morogoro road became a new main axis that underlines the division of the city. This new road represents one of the main paths into the city and extends almost to the harbour zone (Kohlert, 2007, p. 7)

During *Ujamaa* period the Kariakoo grid structure became more pronounced; its street network became much stronger. The 1979 axial lines (fig.4.29) show the new structure quite clearly. There are further enlargements, and the original town centre is no longer as dominant. The arterial roads leading north were extended further, a development that continues today (Kohlert, 2007, p. 8)

During Post-*Ujamaa* to date Morogoro Road has expanded and united with many smaller streets from the old town area, shifting the main axis back to the actual city centre as the 2001 map (fig.4.30) shows. Development continues rapidly, with many unplanned settlements grouped like satellites around the core. Kohlert (2007) argues that;

> If we compare the 1914 map with today's map of the area, it is immediately apparent that while the basic structure has remained the same, the core of the city centre has become denser, with many short roads. The deformed wheel, the outline of which was already discernible in 1920, has become more pronounced and is practically pulling residents, visitors, and new arrivals to the city from outlying villages into the heart of the city. The park in the east is less integrated and is no longer a public park; rather, it accommodates the government seat, cut off from the rest of the city.
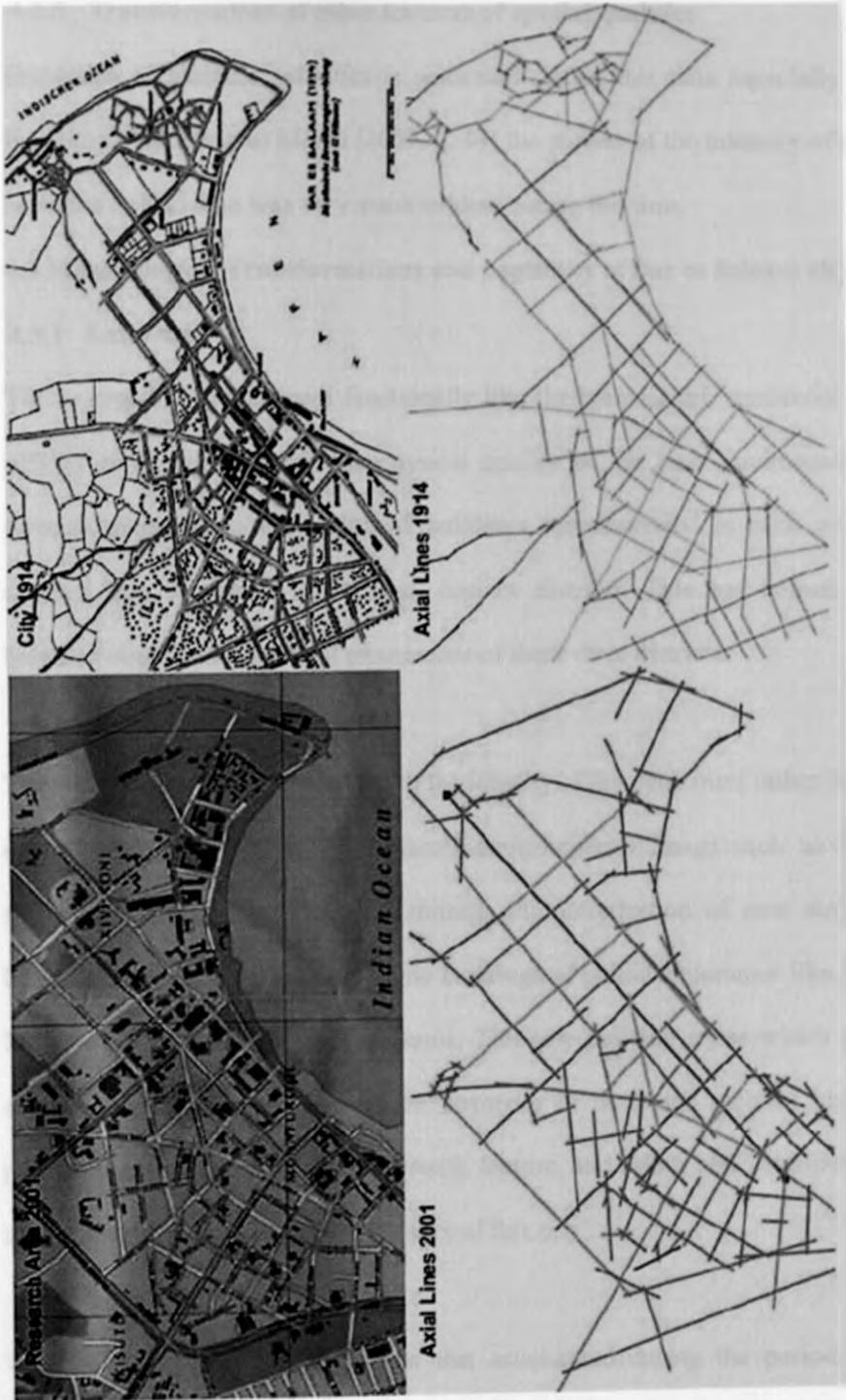
Figure 4.30: Comparison of 2001 to the 1914 Map. Source: (Kohlert, 2007)

4.2.5 Transformation of other features of spatial qualities

Escalation of business activities is witnessed during this time especially in Kariakoo. According to Moshi (2009, p. 44) the picture of the intensity of the activities in Kariakoo was very much evident during this time.

4.3 Morphological Transformations and Legibility of Dar es Salaam city

4.3.1 Land use

The segregation of land uses functionally like the commercial, residential or official zones and through the physical quality of the built environments through specification of quality of buildings recommended in each zone, resulted into formation of separate distinct districts. This has helped to heighten visual and functional prominence of these three districts.

4.3.2 Building Structures

The Arabs/Moslems influenced much the Identity of this settlement rather than other components of Dar es Salaam's environmental image such as the structure and meaning. This was through the introduction of new strong landmarks and nodes, such as the new buildings of public importance like the Mosque, Social hall and the Old Boma. The new building styles which are evident through Islamic features on elements of buildings such as sharp pointed windows and doors, domed roofs, texture, and colour also contributed much to strengthening the visual identity of this city.

The demolitions of Swahili houses that accelerated during the period of economic liberalization in 1980s led to loss of qualities of elements of image like loss of functional continuity along paths due to resulted mixed function buildings lining the paths and loss of visual continuity as a result of mixed

architectural styles of buildings lining the paths during this period. Furthermore the coming of new strong landmark buildings after the period of economic liberalisation, has contributed much in strengthening visual prominence and singularity of the city over others.

4.3.3 Plot pattern

Amalgamation of plots during independence government has resulted into blockage of sightlines along the paths thereby affecting visual permeability and in some cases physical permeability.

4.3.4 Street pattern

The Germans influenced to a greater extent the legibility of the city through their first intervention on the very important component of environmental image that is the spatial structure of this city. They did not influence much the identity of this city as compared to the Arabs who came first and stayed for longer time than them and who their influence had already deepened much its roots. The Germans changed the identity of the city among other ways, through the introduction of new street names and by introduction of new architectural styles especially on religious buildings like the Saint Joseph Roman Catholic church.

The British did much effort to strengthen the legibility of the city through continuing the structure improvement strategies started by the Germans and strengthening of the segregation policies implementation. They also did not contribute much to strengthening the identity of the city.

4.4 Kariakoo area

Kariakoo[18] area is within the CBD of Dar es Salaam city in Tanzania. This area covers about 1.96 km2 of land which is bound by the Morogoro Road to the north, the Biti Titi Street to the east, the Nyerere Road to the south, and the Shaurimoyo and Uhuru Streets as well as Msimbazi valley to the west (fig. 4.31 A, B, C).
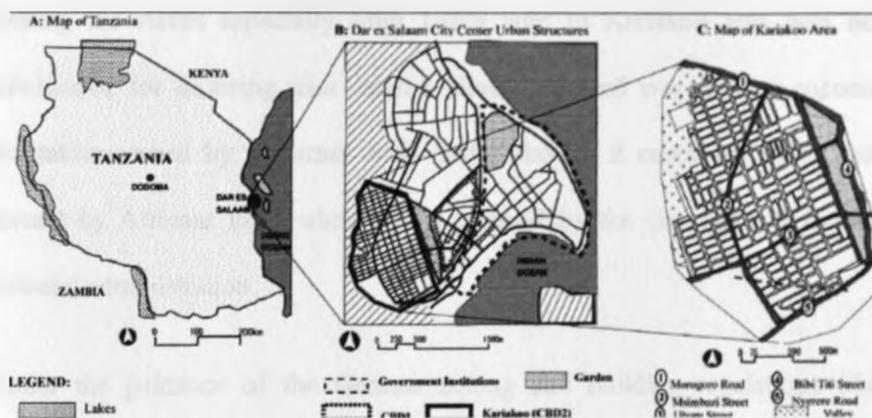
Figure 4.31: Location of Dar es Salaam City and Kariakoo Area.
Source: (Swai & Deguchi, 2009, p. 160).

Kariakoo had its beginning in the 1920s although before this period there existed small huts within this area which was a coconut plantation (Lupala, 2002). Kariakoo developed on this former Sultan's coconut plantation since early 1880s and later was planned by the German and British colonial administrations. They influenced its urban planning through the gridiron pattern layout they introduced for this area.

4.5 Morphological Transformations in Kariakoo

Despite this grid-iron plan paralleled by the colonial and independence governments' regulations and policies, Kariakoo's urban form became

[18] The name Kariakoo traces its origin to the Carrier Corps porters who were encamped in this area during the First World War (Sutton, 1970, p.13). It is a corruption of the word "Carrier Corps".

dominated by transformations which take place at very fast pace. Some of these transformations are the result of redevelopment policies and plans but most of them are a result of actions by private individuals including private owners, investors and other people from outside the area who come to do business or to work in the area.

4.5.1 Land uses

During the Arabs especially from 1880s land in Kariakoo area was not subdivided for differing uses instead almost all land was for the coconut plantation owned by a former Arab Sultan though it contained small huts owned by Africans until when it was planned by the German and British colonial administration.

Under the guidance of the German zoning and building regulations (the *Bauordnung*) of 1891, Kariakoo was earmarked in Zone III together with Gerezani where 'native buildings' with flexible standards were allowed (Lupala, 2002). By 1905 Africans had occupied the northern and western parts of the town (Lupala, 2002). They put up simple structures, organized in clusters unrelated to colonial set up since the area was left with no specified building regulations.

4.5.2 Building Structures

During the Arabs, there were no construction of buildings that were taking place in Kariakoo area, all buildings were the ones built by Native Africans. Intensive building activities in this area started during the German occupation period.

Transformation of buildings' forms in Kariakoo is at higher scale than other areas/zones. For example according to Lupala (2002) in 1959 all houses in this area were typically single storey Swahili with the main buildings facing the street and secondary buildings at the backyards but later he observed a mixed character of high-rise and low-rise development as it is shown on (fig.4.32) for block 76 and 77 in January 2001. The low-rise Swahili type of houses, undergo horizontal extension covering more spaces, change of position of main entrances and change of internal layouts. Figure 4.33 shows entrances being opened to the right to create more privacy.
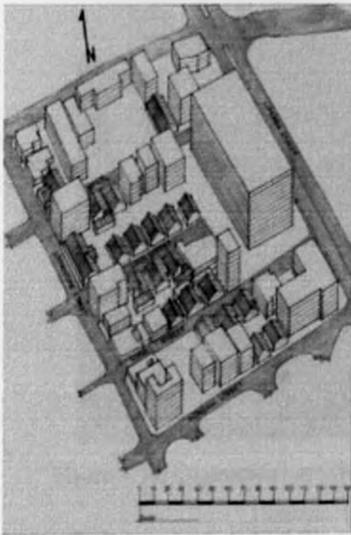
Figure 4.32: High-rise with lowrise developments in Kariakoo

Source: (Lupala, 2002, p. 105)
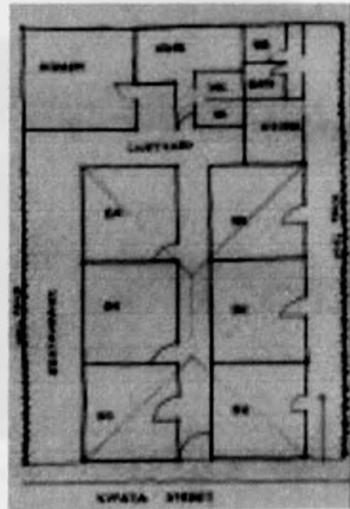
Figure 4.33: Eentrances opened to the right to create more privacy. Source: (Lupala, 2002, p. 106)

Building materials and roof types are also changing. For example the old main building low-rise houses the materials for walls were mud and pole and corrugated iron sheets for roofing. Lupala (2002) observed the majority of the high-rise buildings being built out of sand cement blocks for the walls and corrugated iron sheets for roofs.

House sizes are also transforming. According to Lupala (2002) most of the newly reconstructed houses are bigger than the original structures. Even those houses, which have not been redeveloped, have been extended covering more area than the situation was in late 1950s. Furthermore building functions indicates a changing pattern from typical residential houses in the 1950s and 1960s to predominantly commercial, commercial-residential and office accommodations. Figure 4.34 shows an example of a residential Swahili house which was transformed into a commercial residential building.

Figure 4.34: Commercial activities in a Swahili type along Aggrey Street.
Source: (Moshi, 2009, p. 69)

According to Lupala (2002) Majority of the plots in Kariakoo had relatively lower plot coverage ranging between 44 and 90% in the 1950s until 1970s but in 2001 plot coverage of up to 154% has been observed. Furthermore the Kariakoo's plot layout by the Germans took into consideration the need of adequate exposure of plots through provision of the rear alleyways as pedestrian access to the plots. According to Lupala (2002) the majority of the houses in these plots have been either extended or redeveloped into high-rise buildings which block rear alleyways and lack courtyard spaces. In old

Swahili type of houses, more rooms have been added for commercial or residential purposes. Where such extension or modification to the houses has been made, rear alleyways have been blocked thereby reducing exposure of plots. Furthermore Kariakoo is characterised by extreme proximity of its adjacent buildings. The setback spaces left on the sides of buildings are combined to form circulation space for the numerous shops opening into them (fig. 4.35).

Figure 4.35: Spontaneous shopping corridors. Source: (Moshi, 2009, p. 97)

Physical appearances of buildings are also transforming with individuals such as building owners or local investors being among key players in this process. Figure 4.36 shows an example of transformations on building facades which include change of features and building components such as floor, front verandas, windows, entrance doors, and roofs, and to facilitate commercial activities while new materials and technology are also being improvised (Swai & Deguchi, Transformation of Residential Units into Commercial Spaces in the Central Business District of Dar es Salaam, Tanzania, 2009).

The six-panel figure contains the following captions:

Top-left: Transformed facade of a traditional residential unit
Introduction of shop on the right hand side of the building has caused an alteration of the original Arabic features (See recessed arch on the wall).

Top-right: Transformed facade due to introduction of shop-front. The entire facade has been altered to suit for the new uses.

Middle-left: Transformed building due to extension on the front side to meet the new commercial uses.

Middle-right: Extra roof has been introduced to cover the new verandah for commercial uses.

Bottom-left: Other buildings have been demolished to allow new multi-storey structures with ground and upper commercial spaces.

Bottom-right: Commercial needs has led to new front views such as flat concrete roof extended to cover shop front in order to attract and protect customers.

Figure 4.36: Identification of Façade Transformation. Source: (Swai & Deguchi, 2009, p. 164)

The transformations of buildings were parallel to construction of new styled buildings. Moshi (2009), created some groups to be used to generally describe these changes. First group was of buildings in simple geometrical form (fig.4.37) that were just plastered and painted with timber fenestration and occasionally some steel elements like the security grilles balustrade and handrails; Second group was for the emerging popular style (fig.4.38) category in which the building forms comprised more variety in their facades as more materials and finishes became available. Third one was for Landmark objects

(fig.4.39) category in which the buildings include some features in their façade compositions which make them stand out as landmarks. The last one is a "glass dressing" group (fig.4.40) that involves a recent trend in which buildings are covered with glass curtain walls on their elevations.

Figure 4.37: Simple geometrical Form.
Source: (Moshi, 2009, p. 87)

Figure 4.38: Emerging popular style.
Source: (Moshi, 2009, p. 87)

Figure 4.39: Landmark.
Source: (Moshi, 2009, p. 87)

Figure 4.40: Glass dressing architectural style. Source: (Moshi, 2009, n. 87)

4.5.3 Plot pattern

The Germans and later the British were the first to define street layouts and subdivide Kariakoo area into plots. They had an idea to plan and develop

Kariakoo as a "high density" low-income settlement area for "Native Africans". According to Lupala (2002) plot sizes were at average of 12 by 15 metres (180 square metres) which were meant for single storey Swahili houses. Plots were designed predominantly to accommodate the Swahili house and outer buildings in the courtyard.

During independence government Amalgamation of plots started. This was through the implementation of the 1989 redevelopment plan that recommended developers to combine at least two plots for high-rise development to facilitate flexible design. Among the examples of amalgamation according to Lupala (2002) include, the Co-operative building plot that combined 14 smaller plots to the present plot covering 4,992 square metres. Figure 4.41 shows plot layout for block 76 and 77 on which its left part shows the layout of 1920s with provisions for walkways in the back of the houses as implemented until 1940s whereas its Right shows the old layout superimposed on present developments (Lupala, 2002).
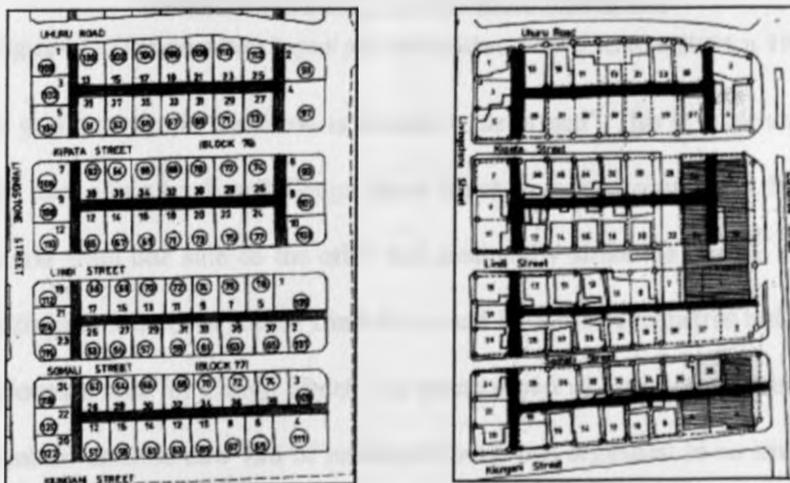
Figure 4.41 Left: The layout of 1920s as implemented until 1940s. Right: Old layout superimposed on present developments. Source: (Lupala, 2002)

4.5.4 Street pattern

During the Arabs Kariakoo area was just coconut plantation. It had no clear street patterns until the Germans came and introduce a gridiron plan (fig. 4.42) that became the first layout for this area. Despite the minor deformations in this layout, it has been becoming stronger as more short streets are being created to link the major consecutive streets.

Figure 4.42: Gridiron pattern Layout plan for Kariakoo. Source: Kironde (1994, p. 196).

The grid structure of Kariakoo is somehow 'deformed'. This is evidenced by sight lines along Lindi and Congo Street which do not continue right through the grid from one side to the other but continually strike the surface of the buildings like the Ushirika for Lindi Street and Small scale industrial buildings in Gerezani area for Congo Street. The western part of Kariakoo flanking the Msimbazi creek is now full of residential buildings organised in an irregular manner. The street network in this area is also irregular. The portions of streets that were crossing the Mnazi Mmoja open space and linking the Zone III and

zones I and II, are no longer due to a fence introduced by the independence government.

4.5.2 Transformation of other features of spatial qualities

According to Lupala (2002) Kariakoo became characterized by Concentration of activities such as walking, hawking, pushed or pulled carts and bicycles along its paths and other spaces. He further says the high volume of activities in spaces in Kariakoo has made this part of the city centre hectic with many activities especially during the day. The author in the Gurdian[19] further describes the condition of the Kariakoo area:

> *The area is fast becoming the main market place for all sorts of commodities, both locally produced and imported. It shows that the original residents of the area and their houses are giving way to big capital, mostly from people of Asian origin and well to do businessmen who have mowed down the old Swahili/Arab style houses and in their place have erected many flat houses. People of Asian community, who initially were initially confined mostly to the main town part of the city, have flocked into Kariakoo, while some well to do traders have set up offices and shopping trades in the area, some of them shifting from the City Centre. The main attraction point appears to be the Kariakoo Market, according to our survey, but the mushrooming of shops for clothes and car parts, communications items and all sorts of merchandise has also attracted other related economic activities including commercial banks, funding agencies and related consulting firms. Seven commercial banks have already opened branches in the area in realisation of the growing business. These include CRDB, Posta, Diamond Trust, Eurafrica, NBC and NMB.*

The newspaper lists more business activities found in the area such as sale of a number of items including "black market products, imported substandard goods and second hand or reconditioned goods ranging from needles to cars" (Moshi, 2009). The picture of the intensity of the activities in Kariakoo is painted by the following quote:

> *Business is brisk and sometimes pedestrians and even cars are naturally blocked by ongoing business from using certain roads or routes as traders spatter their wares on the roads. There are as well many cars, which go in and out of Kariakoo, at least 500 Daladala15 buses enter and leave the area in every one hour with an estimated 5,000 passengers doing their business in the "district". At least every morning there are 12 large seven-tonne lorries carrying farm produce from up country regions to*

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[19] Cited from Moshi (2009)

*Karikaoo Market, which later serves as the distributing point to the rest of the city.
People come from neighbouring countries to buy cloths and other goods at the grand
emerging bazaar of Kariakoo because they are disposed off at lower prices.
"Kariokoo area is a very popular market in the country. Even if you travel outside
the country people will only ask you about Kariakoo. If you meet businessmen in
India or Pakistan they have an idea of what Kariakoo is,"" noted Karim. Another
thing that brings more people to Kariakoo is the fact that, for women they can get
whatever the kind of relish they need, also at a cheaper price. (The Gurdian16;
Tuesday 08-08-2006)*

Furthermore according to Lupala (2002), the area is characterised by poor

planting of trees as there are hardly spaces left for tree planting and for other

soft landscape elements such as grass lawns or trees to absorb glare a situation

results into poor comfort while walking along the Uhuru and Lumumba

Streets; Poor Surface conditions of streets such as Kiungani, Somali, Lindi and

Kipata streets which during the dry season, they become dusty and muddy

with stagnant water pools during the rainy season. There are also poor

pedestrian walking conditions due to Parked vehicles which hinder smooth

walking in this space and mix-ups of bicycle and car traffic that makes

walking along this space unsafe; No protection from rains such as covered

roof tops or arcades, sun; No Street Lighting, as he argues that almost all

Streets in Kariakoo lack streetlights. The absence of streetlights scares people

to walk in the streets during night times.

4.6 Morphological Transformations and Legibility of Kariakoo

4.6.1   Land uses

Creation of zone III under the *Bauordnung* of 1891 and making it a zone in

which buildings with flexible standards were allowed, resulted to making the

area distinct from other zones. By making this area of distinct character, it

became a district easily identifiable from other areas thereby heightening its

visual and functional prominence.

4.6.2 Building Structures

Facades transformations lead to change in visual qualities of buildings which may be landmarks or nodes. These qualities include; visual continuity if the buildings line the paths, visual dominance, singularity or figure-background clarity. Functions of spaces between buildings may affect visual and physical permeability in an area. Change of functions of buildings result in change in functional qualities like functional continuity if the buildings line paths and functional dominance or prominence for nodes or famous buildings. The introduction of new buildings in Kariakoo resulted in strengthening of imageability of this area.

4.6.3 Plot pattern

Amalgamation of plots and the reduction of exposure of plots during independence government may have resulted into blockage of sightlines along the paths thereby affecting visual permeability and in some cases physical permeability.

4.6.4 Street pattern

The deformations of grid along Lindi and Congo Street result into loss of visual scope along the paths since according to Hillier (1996) 'deformities' in the grid affect visual permeability.

The resulted Irregular street network to the western part of Kariakoo result into difficulties in navigating the area and creating mental images. Furthermore the cutting of the portions of streets that were crossing the Mnazi Mmoja open space result into loss on structure integration and result in making the open space a mere barrier and not a strong edge. This results in

creating difficulties in mental image building among the users of this environment.

Other transformations that affect the legibility of this area are like; concentration of activities along paths heightens the prominence of paths. Poor planting of trees result into loss of visual continuity. Poor Surface conditions of streets such as Kiungani, Somali, Lindi and Kipata streets may lead to weak tactile qualities that could help the blind to navigate through the area easily. The absence of streetlights scares people to walk in the streets during night times thereby making pedestrians walking during nights not become confident with the way they should go through.

Generally the Legibility of Kariakoo area was very much affected as compared to other parts of the city due to a series of interventions that were being directed to this place since colonial periods.

This chapter has provided a brief discussion on past morphological condition of city, the periodic transformations that have taken place on the city and Kariakoo area and the way they affected the legibility of the city. The next chapter provides results of the study and their discussion. It entails discussion on identified elements of image of Kariakoo area, the transformations that have taken place in the elements, the resulted physical condition of the elements and the current state of legibility of this area.

5. FIELDWORK RESULTS AND DISCUSSION

This chapter presents findings with respect to the transformation on the image elements' qualities and the resulted state of legibility of the area. The important issues here will be to outline the identified elements of image of Kariakoo area, locate them, and discuss their qualities relative to morphological transformation that take place on them.

5.1 Paths

5.1.1 Past identified Paths

Prominent paths in the area included Morogoro/Msimbazi road; Caravan/Msimbazi street; Kilochela/Uhuru road; New/Lumumba street; Pugu/Nyerere road; Kariakoo Street; Congo Street; Kipata/Sikukuu Street; Kirk/Lindi street; Aggrey street; Tandamti Street; Likoma Street; Mragia Street; Sikukuu Street; Nyamwezi Street; Swahili street and Tanga street (fig. 5.1).

5.1.2 Qualities of the paths and their transformation

5.1 Paths' names

Before independence in 1961, almost all streets had names given to them by British and Germany colonialists which helped them to be easily identifiable (fig. 5.1). The paths' names were reflecting Tanzania being under colonialism (Said, 2006). After independence some of the paths' names were transformed by the independent government. Some of these new names were of Tanzania independence struggle pioneers, African politicians in order to honour them.

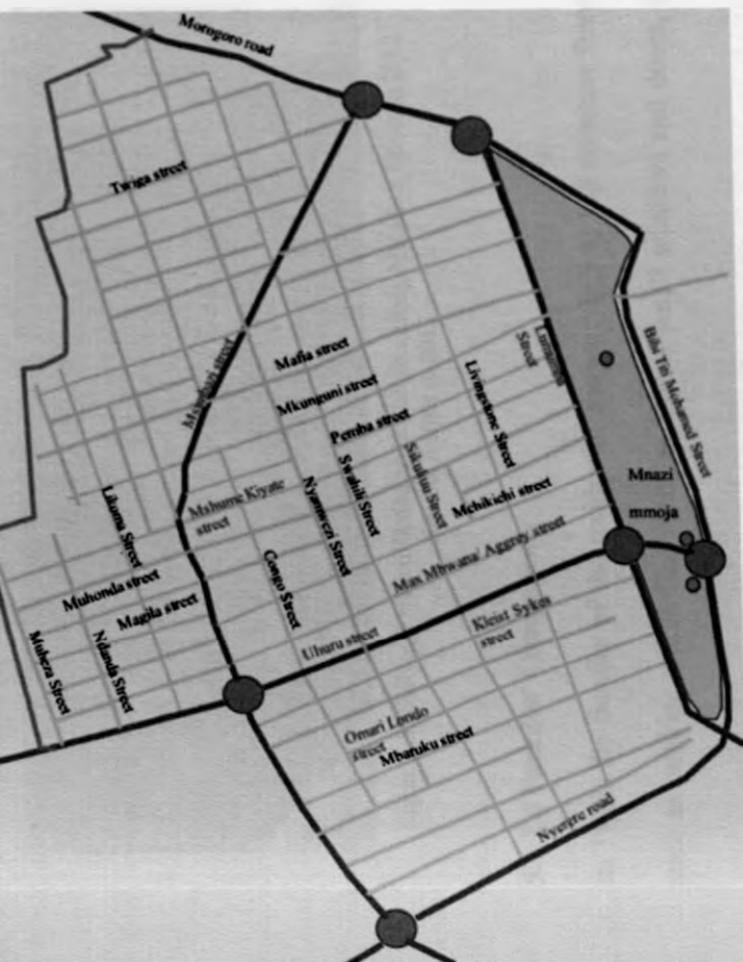Figure 5.1: Old Paths' names in green before 1961. Source: Author in 2012

Figure 5.2: New Paths' names in red after 1961. Source: Author in 2012

5.1.2.2 Architectural styles of buildings lined the paths

In 1970s, most of the buildings lined the paths in Kariakoo were of Swahili type. This uniformity of styles was heightening the continuity character of the paths in this area. Today most of the paths are lined with buildings of differing styles. New buildings that are being built co-exist with the survived Swahili houses (fig.5.4).These new styles are now changing the uniform character of streetscapes.

5.1.2.3 Heights of buildings along the paths

In 1905s, almost all buildings lined the paths were single storey. In 1960s according to Brennan & Burton (2007), Uhuru and Msimbazi streets were lined with three-to five-storey commercial enterprises. Today there are many high rise buildings of more than five storeys along these paths. These tall buildings co-exist with the single storey houses (fig. 5.3) resulting in non-uniform skyline.

Figure 5.3: Buildings with differing styles, heights along Msimbazi Street in 2012.
Source: Author in 2012

5.1.2.4 Facades' Components

In 1970s the façades of the residential houses (fig.5.4) had common features such as outdoor spaces like verandas, floors, small windows and doors, and

roofs. Today the components on the façades have changed or removed in many cases to facilitate commercial activities (fig. 5.5).

Figure 5.4: Buildings with verandas in 1970s, Source: Sutton plate 52 edited by author in 2012

Figure 5.5: Marijani Rajab's home along Somali street, Photo by Author in 2012.

In other cases, facades of the buildings are being repainted. For example the yellow painted facades of the NHC multi-storey commercial residential houses along Nkrumah Street (fig. 5.6) are now appearing in pink colour (fig. 5.7)

Figure 5.6: along Yellow painted facades along Nkrumah street in 2009.

Source: (Moshi, 2009, p 78).

Figure 5.7: Yellow painted facades along Nkrumah Street in 2012. Photo by Author in 2012.

5.1.2.5 Trees lined the paths

Many paths in Kariakoo before 1961 were lined with coconut trees (fig. 5.8). The presence of these trees helped much in heightening the Visual continuity character of most of the paths. But, nowadays, is hardly we find trees in Kariakoo. Along most of the paths, trees are being cut. The existed coconut trees are no longer.

Figure 5.8: Kitchwelle Street before 1961. Source: itsdar.net.

5.1.2.6 Concentration of activities along the paths

Concentration of activities along the paths before 1961 was not high. Most of streets had few people, activities, cars, handcarts and the like. This condition persisted till 1970s. According to Moshi (2009, p. 62) the street space functioned like a "common living room" among the residents occupying houses along the street. Also it was frequently used as playing area for children under the supervising eye of the parents from the verandas (fig. 5.9).

Figure 5.9: Calm streets in 1970s with few people and children.
Source: Olenmark, E in (Moshi, 2009, p. 65)

Nowadays, streets are characterized by high concentration of activities. Congo and Msimbazi Streets (figs.5.10 and 5.11) have become very famous streets characterized by high concentration of Business activities and people. The activities include shops, hawking, handcarts etc.

Figure 5.11: Concentration of people and activities along Msimbazi Street.

Photo by Author in 2012.

Figure 5.10: Concentration of people and activities along Congo Street. Photo by Author in 2012.

5.1.2.7 Encroachments

Some years back especially before the period of economic liberalisation in 1980s most of spaces between buildings were free. Nowadays the spaces are encroached by business activities such as shops, kiosks, car parking etc. Though there are few spontaneous circulation paths between adjacent buildings, permeability of this area depends mainly on major routes.

5.1.2.8 Prominent structures along the paths

During fight for independence in 1950s some streets were gaining prominence by containing houses of famous people like independence pioneers in Tanzania. After independence especially after the period of economic liberalisation in 1980s, most of houses of independence pioneers were demolished or changed their functions.

5.1.2.9 Introduction of new markers

Narung'ombe Street was not very famous before 1963. It started to become famous after the introduction of the so called Saigon Sports club office in 1963. It is increasingly becoming more prominent place as many famous people in Tanzania use to meet and discuss issues concerning politics, sports, and the like in this place. Furthermore new prominent structures were constructed as a result of the re-introduction of Local government administrative authorities in 1980s. Among them, is the Gerezani ward Local Government office building along Somali street.

5.2 Edges

5.2.1   Past identified edges

The Edges of Kariakoo area in 1916 were Morogoro Road to the north, Lumumba Street to the east the Nyerere Road to the south, and Msimbazi Street to the west. Later in 1960s the western edge became the Msimbazi creek and a small portion of Msimbazi street which starts from Msimbazi roundabout going southwards to Nyerere road (fig.5.12)

5.2.2   Qualities of the edges and their transformation

5.2.2   Position of an edge

Msimbazi Street in 1916 was the edge separating the western part of Kariakoo which later in 1960s according to Brennan & Burton (2007, p. 123) was declared a residential zone for Africans from its eastern part which was declared commercial zone. During this period the portion of this road from the Msimbazi/Uhuru junction to Nyerere/Msimbazi junction was acting as the western edge of Gerezani area. Nowadays the western edge of Kariakoo is the Shaurimoyo Street and Msimbazi creek see fig.5.13.
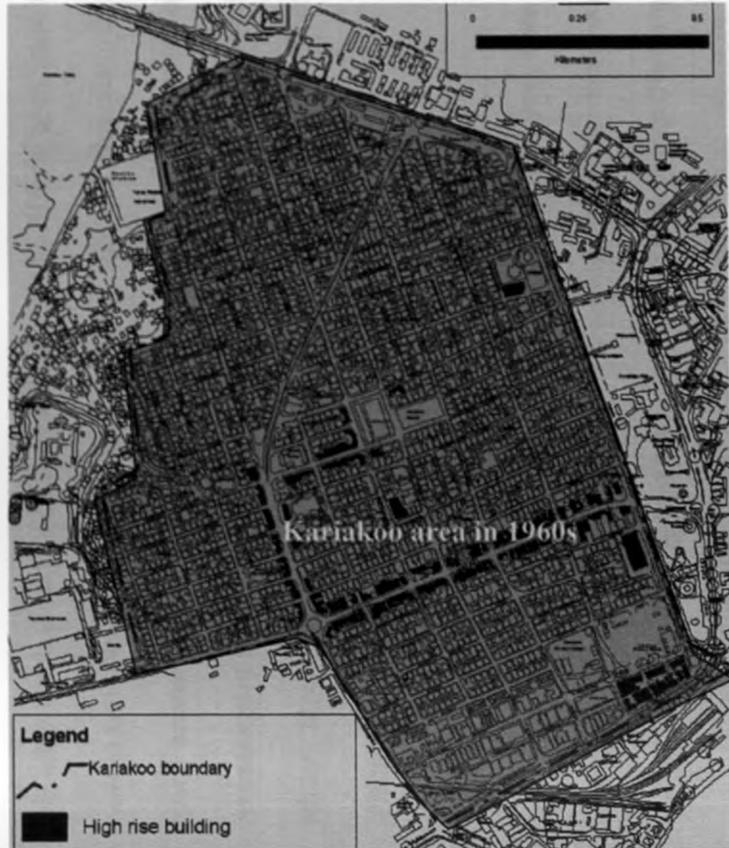
Figure 5.12: Edges of Kariakoo in 1960s. Source: (Moshi, 2009, p. 54), modified by author in 2012.

Figure 5.13: Edges

5.2 Concentration of Visual attention

Since 1914, Lumumba Street has been an edge separating the strong contrasting sub-districts. These were the African and Indian quarters. In 1935 this edge was laid very open to view by the Mnazi Mmoja open space on its eastern part which occupied no single structure within it. Nowadays the open space accommodates some structures. The structure include among others, Arnautouglou hall, Mnazi Mmoja primary school, District court buildings and Mnazi Mmoja hospital as a result Lumumba street is slowly becoming obscured.

5.2.2.3 Penetration to an edge

Msimbazi creek is a very strong edge demarcating Kariakoo from Ilala, Mchikichini, and Jangwani unplanned areas. Before 1950s there were no buildings along this edge and it was an area prone to floods. Nowadays the creek is full of Swahili single storey residential houses organized in an irregular pattern with confusing paths. The accessibility to the creek is through the spaces left between the existing residential buildings and Twiga road.

5.3 Districts

5.3.2   Past identified Districts

Kariakoo area comprised of districts like Kariakoo, Gerezani, Jangwani, Mchikichini and Mission Quarter see fig.5.14. Each of these districts had its homogeneous character that helps it to be easily distinguished from others. Nowadays the edges of these sub-districts are no longer the same as the original ones, see fig.5.15.

Figure 5.14: Sub-districts of Kariakoo in 1960s. Source: (Moshi, 2009, p. 54), modified by author in 2012.

Figure 5.15: Sub-districts of Kariakoo in 2012 as a representation of text information from Local Government Official document. Source: (Moshi, 2009, p. 54), modified by author in 2012.

5.3.2   Qualities of the Districts and their transformation

5.3.2.1 Building heights, styles and path enclosure

Kariakoo sub-district before 1960s was characterised by single-storey Swahili residential buildings but nowadays it leads all other sub-districts in the area by having a large number of high-rise buildings. New high rise of various styles are coming. Most of these buildings are for commercial residential, though there are some with single function like hotels, office buildings etc.

5.3.2.2 Functional character

Gerezani district in 1905 used to be a home of many African independence pioneers. These included among others, Omari Londo, Ally Sykes, Zuberi Mtemvu, Mashado Plantan, Muhsin Mende and Dossa Aziz. This district gained its prominence by being a home of these pioneers who were residing in Gerezani. After independence especially a period after economic liberalisation in 1980s, most of the houses of these pioneers were demolished or changed function. Gerezani area east of Msimbazi street is nowadays characterised by small scale industries, fabrication workshops, motor vehicle repair, garages and workshops. Gerezani area west of Msimbazi Street which was not part of Kariako in 1905 is characterized by institutional buildings and a residential quarter for railway workers. These institutions include schools such as Benjamini Mkapa secondary school, Al-Haramain Teachers college etc. The area is almost static though recently the railway administration has planned to demolish the existing quarters.

The western part of Jangwani district was non-habitable before independence in 1961, so there were few houses there. Bigger part of this area is an area which is prone to floods, so it was left to be used as a rice field and as an open

space. Nowadays the area is full of dozens of buildings thereby swallowing the existed natural open space. These buildings have been frequently flooded, but when they dry up, people come back.

5.3.2.3 Change in functional character

To the west of Kariakoo in 1950s was the Mission Quarter, an exclusive African mission area set aside by the British to separate the Christian minority from the Muslim majority in the town. According to (Said, 2006), this was the only area in Kariakoo where missionaries managed to build a chapel. African Christians were confined to this area. The singularity of this district depended much on these street names and presence of churches. Nowadays the functional identity of this district is being eroded due to some of the important religious buildings being changed their functions. For example there used to be a church along Uhuru road which is no longer a church instead it a big shop selling electronic equipments such as phones etc.

5.3 Network of paths

Almost one-thirds of Mchikichini was unplanned before 1961. Its eastern part (Mission quarter area) in 1950s was planned together with the other wards of Kariakoo in grid network of paths and its south-western part later was planned and NHC buildings were erected. The network of paths in this NHC quarter is regular and clear. The remaining part is unplanned. Nowadays Mchikichini has become full of Single-storey Swahili residential houses organised in somehow haphazard manner, most of them being for residential purpose only. It is characterised by irregular network of confusing paths and edges. In some parts buildings have flocked into the flood prone land in the Msimbazi river valley. These buildings were not there before.

5.4 Nodes

5.4.1 Past identified Nodes

5.4.2 Qualities of the Nodes and their transformation

Kariakoo area had strong activity nodes and road junctions as summarised in Appendix 9

5.4.2.1 Intensity of use

Kariakoo market in 1950s was among the very strong activity nodes in Kariakoo. The market was just a local market. According to Said (2006), one could tell the tribe of the traders from the kind of trade he or she was engaged in. Kariakoo Market was a fertile place for TANU. Nowadays the market has become extremely busy node with investors and customers from even outside the country. It has been cited as an important and busiest business hub attracting local and foreign traders from both African and Asian countries. In recent years, the area has emerged as a significant place for goods from various parts of the world.

6.3 Original location of the elements of image

Yanga SC ground before 1971

Old AA and TANU in 1954 Office building built in 1930s

Sheikh Suleiman Takadir's auction mart in 1950s

Arnautouglou Hall for concerts in 1950s.

Single storey Kariakoo market building in 1920s.

Sykes's office Verandah in 1950s

First church for African Christian in Kariakoo.

KKKT church

Ushirika building in 1960s

DDC Hall

John Lupia's House where AA was born in 1929.

Church Along Uhuru

Simba Sports club site before 1970s

Marijani Rajab's house

First University in Tanzania

Dossa Aziz's house where "Sunday Baraza was being conducted

Omari Londo's house
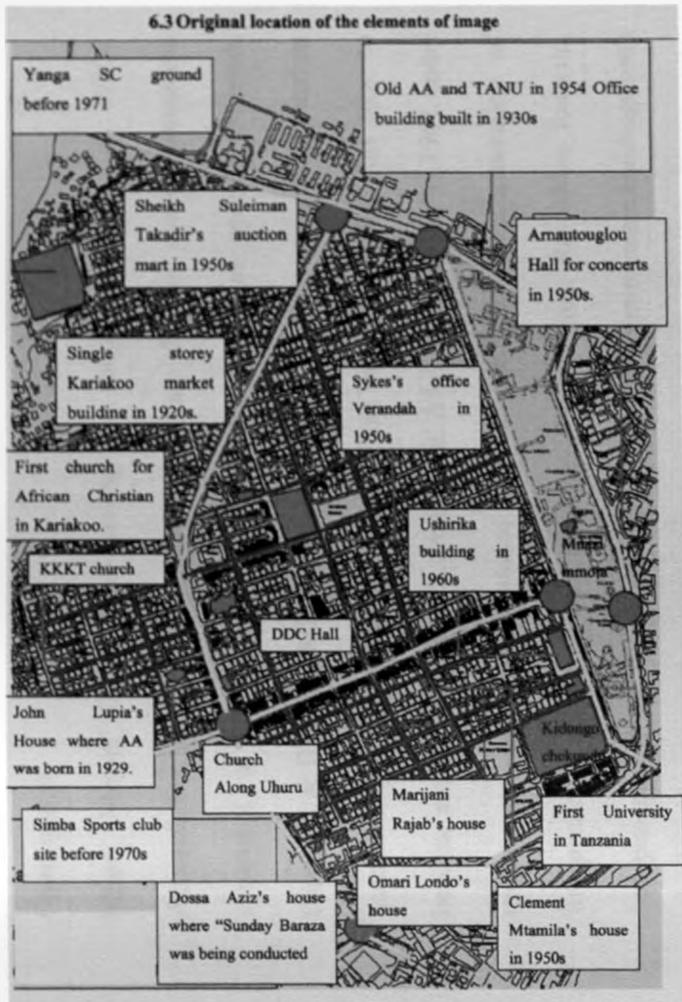
Clement Mtamila's house in 1950s

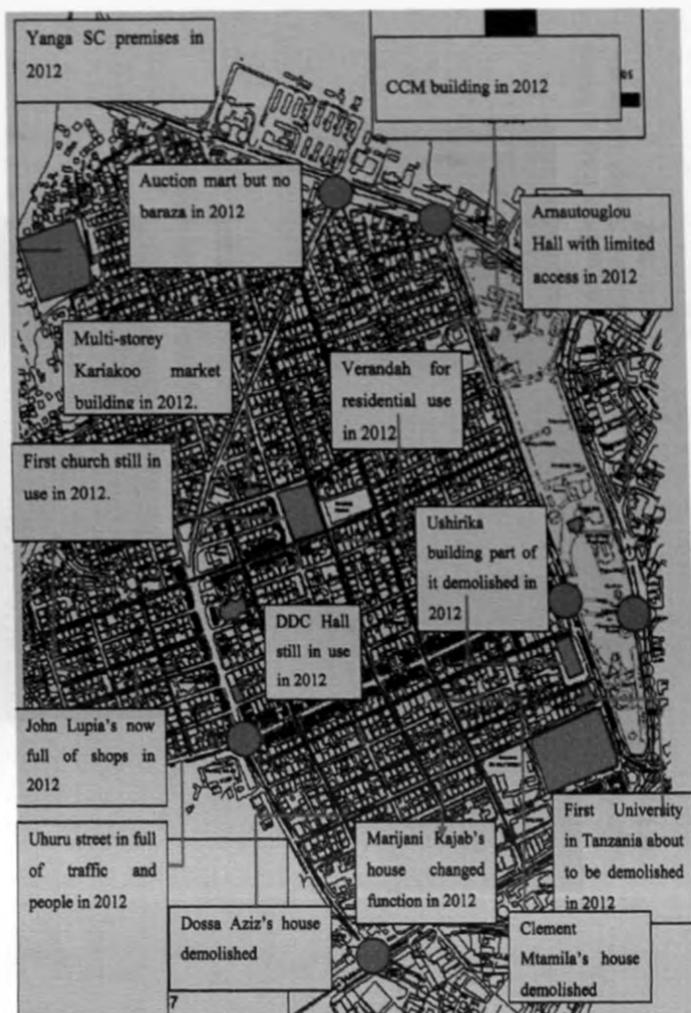Figure 5.16: Kariakoo's Nodes and Landmarks in 1960s. Source: (Moshi, 2009, p. 54), modified by author in 2012.

Figure 5.17: Kariakoo's Nodes and Landmarks in 2012. Source:
(Moshi, 2009, p. 54), modified by author in 2012.

5.4.2.2 Accessibility and accommodation

Open spaces

Mnazi Mmoja Ground was among the important spaces in 1950s. Accessibility was not limited and the space did not contain permanent structures, in fact it was reserved for non-European sporting purposes (Brennan & Burton, 2007). Today the Ground has become less integrated as accessibility to pedestrians is limited. That has resulted into this edge to become a barrier instead of a strong node. After independence in 1961, some monuments were commissioned by the GoT for commemoration of independence. These include structures, Uhuru torch, Revolution fountain, Independence tower. The place also contains some government buildings such as Mnazi Mmoja hospital, Arnautouglou hall etc.

Figure 5.18: Revolution fountain at Mnazi Mmoja open space.
Source: lukwangule.blogspot.com and by author in 2012.

Figure 5.19: Buildings in Mnazi Mmoja open space. Photo by Author in 2012.

Figure 5.20: Independence tower at Mnazi Mmoja open space. Source: Author in 2012.

Figure 5.21: Fence of Mnazi Mmoja open
space. Source: Author in 2012

5.4.2.3 Functional character of buildings facing open spaces

Kidongo Chekundu open space is another node existed since Kariakoo area was laid. After independence in 1961 the space was surrounded by institutional buildings. These buildings included the first university in Tanzania. This place was also well fenced and had some trees and bollards surrounding it. Today commercial residential buildings (fig. 5.22) are being put up on the northern side of this space. For example, along Kiungani Street, facing buildings are predominantly used for wholesale of goods. Furthermore there are very few plants/trees, vehicles being parked (fig. 5.24) and deteriorating fence (fig. 5.23) surrounding this area a situation that results in loss of visual quality of this space.

Figure 5.22: New buildings facing Kidongo chekundu open space.
Photo by Author in 2012.

Figure 5.23: Deteriorating fence at Kidongo chekundu open space. Source:

Figure 5.24: Vehicles parked at Kidongo chekundu open space. Photo by Author in 2012.

5.4.2.4 Functions of nodes

Open spaces

The Jangwani rice field in 1950s nowadays has become live due to many congregations at national and local level being held at the place. For example in 1990 Pope John Paul II, preached here. Political campaigns meetings, University Students strikes come to be resolved here etc. This place is nowadays also used as Lorry parking terminal.

Barazas

During fight for independence in 1950s, Kariakoo used to have the so called *Barazas*. These places were being used for discussion of among other things the politics of that time. Sheikh Takadir's auction mart was an example (fig. 5.25). According to (Said, 2006), Sheikh Takadir was the Chairman of the TANU Elders Council. The auction used to be the meeting place of TANU members. They used to meet at this place to drink coffee, discuss politics and while away the time. After independence in 1961, most of the *Barazas* and *vijiwe vya kahawa* have changed their functions and others have completely disappeared. For example the *"Sunday baraza"* together with the building where it was being conducted in Dossa Aziz's house have disappeared and on its place now there is a multi-storey commercial residential building

(fig.5.29). Another is the Sheikh Suleiman Takadir's auction mart which is no longer there instead it is replaced by a business auction mart.

Figure 5.25: New structure at Sheikh Takadir's auction mart place along Mkunguni Street. Photo by Author in 2012.

5.4.2.5 Introduction of new Nodes

In Kariakoo area there are emerging very powerful and prominent *Barazas* and local government offices like the Gerezani ward local government office building (fig.5.27) along Omari Londo Street. Among them is the so called Saigon Sports Club (fig. 5.26) which is located along Narung'ombe Street in Kariakoo ward.

Figure 5.26: Saigon Sports Club. Photo by Author in 2012.

Figure 5.27: Local Government office building along Omari Londo street. Photo by Author in 2012.

5.4 Prominent structures at junctions

In 1950s, at the junctions of some streets, there used to be famous structures of historical significance like independence pioneers' residences which were being used as meeting points for some occasions. For example at the junction of Likoma and Magila streets there was *Mzee* John Lupia's house. This was also being used as a meeting place for African Association members. It is a place where the African Association was founded in 1929. In the house of *Mzee* Clement Mtamila which was located at the junction of Kipata/Kleist Sykes and Sikukuu/Zaramo streets, important meetings nationally were being conducted. Said (2006) argues that;

> *It was in this house Nyerere the then president of TANU presented the letter from Father Walsh in which he was given the ultimatum of either to continue to teach at the Catholic school in Pugu or resign to pursue politics. This important meeting in which Mwalimu Nyerere decided to resign from teaching and work for TANU was chaired by Clement Mtamila in this house in the presence of other members of the TANU Executive Committee like, John Rupia, Oscar Kambona, Bibi Tatu Binti Mzee and Bibi Titi Mohamed. He also argues that, Weekly meetings on burning political issues were being discussed at the "Sunday baraza." either in Dossa's house on Congo Street or at Abdulwahid's house on Stanley Street (now Max Mbwana), where Nyerere used to come every Sunday to meet the TAA leadership and discuss the politics of the day. Various schemes against the British were hatched from these two houses. The meetings at TAA headquarters in New Street, now Lumumba, was merely to rubber stamp the decisions arrived at the Sunday barazas (Said, 2006).*

Later after independence in 1961, demolition/change of function of buildings of public importance along the junctions of some streets became accelerated. For example the house of *Mzee* Clement Mtamila and Dossa's house were replaced by new high-rise commercial residential structures. The *Mzee* John Lupia's and the Abdulwahid's houses have changed their functions from residential to commercial residential and their façades have changed completely to allow business activity to take place.

Figure 5.28: Sykes Clinic at Sykes's home place Kipata Street, Photo by Author in 2012.

Figure 5.29: New structure at "Sunday Baraza's" place along Mbaruku Street. Photo by Author in 2012.

5.5 Landmarks

5.5.1 Past identified Landmarks

In Kariakoo there were some important landmarks that helped to strengthen the imageability of this area see Appendix 9.

5.5.2 Qualities of the Landmarks and their transformation

5.5.2.1 Openness to view

Kariakoo Market with peculiar form built in 1974 which was designed by the architect B.J. Amuli to replace the existed steel structure, became a very strong landmark in this area. It used to be surrounded by a big space that was free (fig. 5.30). It was not very much congested with activities, structures etc. Its spatial setting was very much allowing it to be seen clearly by its observers thereby heightening the figure-background clarity quality. Today the space that surrounded the market, became encroached by activities, stalls and a new structure (fig. 5.31).

Figure 5.30: Kariakoo market in 1971
with big free space infront. Source:
Swahilitime.blogspot.com

Figure 5.31: Space infront of Kariakoo in
2012, Photo by author in 2012.

Yanga SC building

The Yanga's three storey headquarters was built in 1970. During this time the
visibility and accesibility to Yanga sports club premises from its western part
of Kariakoo was not very much strong due to a narrow road which was leading
to them. Recently the Twiga street that pass close to main gate to Yanga sports
club premises in Jangwani was widened and extended to join Morogoro road
through Jangwani grounds. The widening of Twiga street (fig. 5.32) has made
an allowance for the Yanga sports club premises to be seen clearly by its
observers.

Figure 5.32: Widened Twiga Street in 2012, Source: Author 2012.

5.5.2.2 Height of buildings

Ushirika (Co-operative) building (fig. 5.33) before 1960s was the tallest of all buildings in Kariakoo. It used to be a very strong landmark in Kariakoo due to being taller than others. Today Ushirika building is competing with other new structures that are coming in Kariakoo like the Summit towers building (fig. 5.34). It is no longer the only tallest building in this area.

Figure 5.33: Ushirika building in 1969, Source: Plate 2 in (Sutton, 1970).

Figure 5.34: Summit tower building adjacent to Ushirika building in 2012, Photo by Author in2012.

5.5 Concentration of association

In 1950s Kariakoo particularly in the mission quarter area, there existed some churches which helped to strengthen the identity of this place. These include the church along Uhuru road (fig.35). Nowadays the church is no longer. It is now used as a shop for selling electronic equipments. The building was being associated by many christians and other people but nowadays, it has lost its associations with the public as it used to be.

Figure 5.35: Old church building along Uhuru road. Photo by Author in 2012.

Independent Pioneers Houses

In 1950s Kariakoo contained many buildings of historic value. These were acting as scenes of historic events by being homes of independence fight pioneers. The buildings are being replaced by new structures include among others is the Dossa Aziz's house where there is a new high rise structure on where it stood. The Omari Londo's house and the Marijan Rajab's houses have changed their appearance and function to accommodate business activities like shops.

5.6 Public Image

The subjects expressed the following as part of their image of Kariakoo area:

73% were able to locate some current famous elements. These elements include, Uhuru torch, Mtoro mosque, Manyema mosque, Idrisa mosque, KKKT church, Saigon Club and old TANU offices; 75% were able to locate some current famous bus stops in the area. These included Shule ya Uhuru, Congo, Bakhresa, Msimbazi polisi, Kariakoo, Mchikichini, Fire, Baridi and Mnazi Mmoja.

Only 29% were able to recognize and locate the sites where the old famous structures stood in Kariakoo area. These included the old DDC hall, old Kilwa jazz hall, Mzee Mshume Kiyate's home, Mzee John Lupia's home, Mzee Abdulwahid Sykes's home, Mzee Dossa Aziz's home, Mzee Omari Londo's home and Sheikh Suleiman Takadir's auction mart.

51% were able to tell the sources of names of some streets. These included Pugu/Nyerere road, Lumumba road, Shaurimoyo road and Nkrumah Street.

42% were able to tell the sources of names given to some districts. These included, Kariakoo, Gerezani, Jangwani, Mchikichini, Mnazi Mmoja, Mission Quarter and Msimbazi creek.

75% were able to tell the streets with shops specialized for selling some special products. These include streets for selling, utensils, electronics equipment selling, some mechanical appliances such as Refrigerators, Air Conditioners, electric fans and the like, and crop products such as fruits.

The usability of the elements of image in instructing visitors in this area was reflected in the questionnaires given to shopkeepers in order to know how they instruct their customers to their business premises. The following was their report:

70% of the respondents use street names and 55% use famous buildings which area close to their business premises; Only 10% of respondents noticed changes in the elements they were using to instruct their visitors or customers to their business premises whereas the remaining, that is 90% did not notice the changes in the elements; only 10% of the respondents reported difficulties they encounter in instructing people to their business premises as a result of

the above changes whereas the remaining, that is 90% of the respondents were not able to describe.

66% of subjects from antiquities department mentioned Kariakoo market and CCM building at the junction of Lumumba and Kariakoo street to be the only monuments under conservation in Kariakoo area and there are guidelines that are used to ensure their protection.

5.7 Discussion of findings

5.8 Paths

5.8.1   Paths' names

The names of paths before transformation helped much to enhance its legibility. For example 70% of interviewees use street names to direct visitors to their business premises. The changes of street names resulted in change of identity.

5.8.2   Change in architectural styles of buildings flanking the paths

The Swahili style buildings lined the paths in 1950s were creating a continuity of uniform style facades, so visual continuity quality was high as compared to current discontinuity of styles on facades resulted by mixed architectural styles of buildings lining the paths. This loss of continuity results into erosion of legibility of these paths.

#### 5.8.3   Heights of buildings flanking the paths

The single storey buildings existed before 1961 were resulting in less enclosure[20] (fig.5.36) within the paths hence low paths' legibility. Nowadays the high-rise buildings lining the paths have helped to heighten paths' legibility by increasing their sense enclosure (fig.5.37), though in some paths, the differing heights of buildings facing each other have resulted in an undefined path enclosure (fig.5.38). Furthermore the uniformity in heights before 1960s were resulting in regular skylines (fig.39) which helped to

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[20] According to Alcock *et al.,* (1985) path enclosure is the height/width ratio. This quality helps to give a strong character. easily distinguished by users and to bring out the relative functional importance of each path. It is the quality that improves path's legibility.

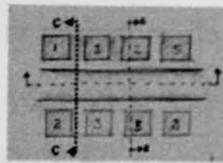simplify the visual form of streetscapes as compared to current irregular skylines (fig.5.40)
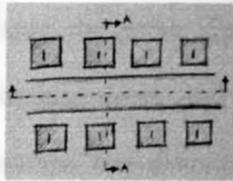
Plan of a portion of a path lined with single storey buildings before 1961
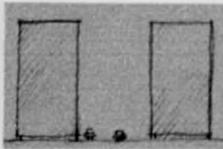

Plan of a portion of a path lined with Multi-storey buildings after 1980s

Plan of a portion of a path lined with Multi-storey buildings after 1980s
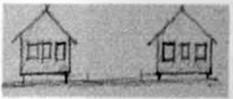
Section A-A

Figure 5.36: Less enclosure formed with opposite single storey buildings with same heights before 1961. Source: Author in 2012
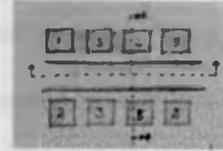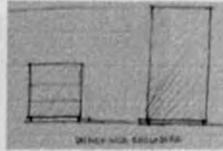

Section C-C

Figure 5.37: More enclosure formed with opposite Multi-storey buildings with same heights after 1980s. Source: Author in 2012

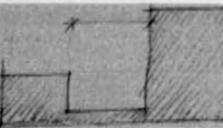
Section B-B

Figure 5.38: An undefined enclosure formed with opposite buildings with differing heights after 1980s. Source: Author in 2012

Figure 5.39: A uniform skyline formed by single storey houses along paths in Kariakoo before 1961. Source: Author in 2012
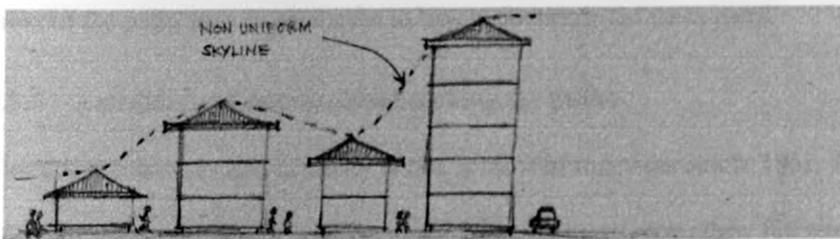

Figure 5.40: A non-uniform skyline formed by single storey houses along paths in Kariakoo in 1980s. Source: Author in 2012

106

5.8.4 Facades' components

Repetition of components (fig.5.41) and colours of facades in the existed Swahili residential houses before 1961 helped to heighten visual continuity along the paths. Change or removal of floors, front verandas, windows, entrance doors, and roofs (fig.5.42) to facilitate commercial activities has resulted into distortion of the visual continuity and hence legibility of the paths.
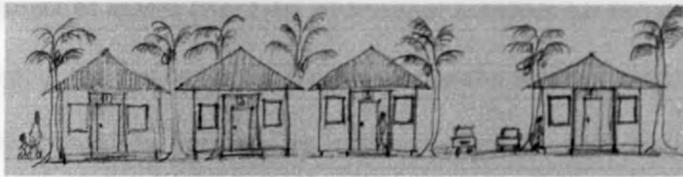

Figure 5.41: single storey Swahili houses with verandas and house numbers on top of front doors before 1961. Source: Author in 2012
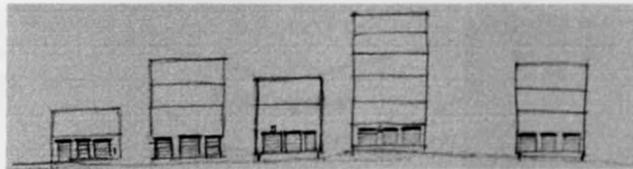
Figure 5.42: Multi-storey buildings without verandas and house numbers on top of front doors after 1980s. Source: Author in 2012

5.8.5 Trees lining the paths

The coconut trees that lined these paths before 1905 helped much to strengthen the visual continuity along the paths. The absence of trees along most of the paths nowadays results in loss in continuity of these paths.

5.8.6 Activities and encroachments along the paths

There was relatively less intensity of use in most of the paths before 1961. The current concentration of activities along paths helps to strengthen functional identities of the paths. For example 75% of respondents mentioned Congo Street as a very famous path in Kariakoo due to being characterized by high

concentration of Business activities along it. The street has become more prominent.

Clear space between adjacent single-storey Swahili residential buildings before the period of economic liberalisation in 1980s were helping much to strengthen the visual scope along the paths in this area. On the other hand, they were contributing much in forming less enclosure (fig. 5.45). The encroachment of spaces (fig. 5.46) by business activities has helped much in strengthening the enclosure (fig.5.46) of these paths while on the other hand they have reduced the permeability, enclosure (fig.5.45) and visual scope of the area.
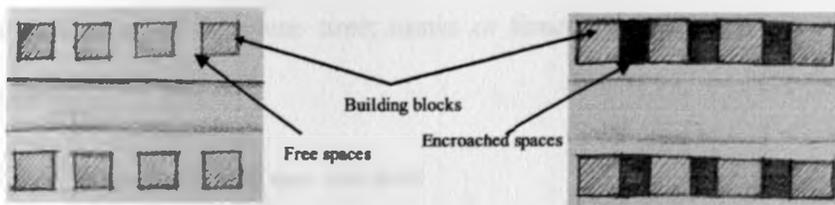
Figure 5.43: Plan of a portion of a path lined with buildings with free spaces between them before 1961. Source: Author in 2012

Figure 5.44: Plan of a portion of a path lined with buildings with encroached spaces between them after 1980s. Source: Author in 2012
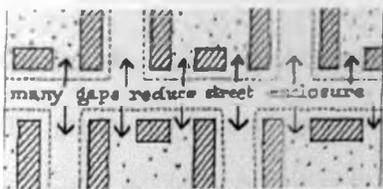
Figure 5.45: Many gaps between buildings.
Source: Alcock *et al* (1985, p. 51).

Figure 5.46: Few gaps between buildings.
Source: Alcock *et al* (1985, p. 52).

5.8.7 Prominent structures at the junctions

The presence of structures of public importance along the paths in 1950s was helping to give prominence to these paths. The demolition or change of

function of the houses of independence pioneers that lined most of the paths in the area resulted to loss in functional prominence of the paths. This was reflected in the basic office interview whereby less that 30% mentioned Somali/ Omari Londo street as among famous street due to change of functions of houses of Mzee Omari Londo and Marijani Rajab that are located along these paths.

5.8.8 House numbering system

The inconsistence of house numbering system has contributed to many people in this area not to relying on them during directing visitors in the area. This is revealed by the results in the questionnaires whereby among all interviewees no one uses house numbers to direct visitors to their business premises or homes. Most of them use street names or famous buildings close to their premises.

5.8.9 Introduction of new markers

The introduction of new markers like Saigon Sports club in 1963 along Narung'ombe Street has contributed to heightening the imageability of this area. This is reflected in the basic office interview whereby 80% of the interviewees were able to recognize and locate this club.

The presence of Local government administrative offices has helped to strengthen the imageability of Somali street and Kariakoo area at large. This was revealed by the results from office interview whereby 80% of respondents were able to identify and locate these offices in this area.

5.9 Edges

5.9.1 Concentration of Visual attention

The clearance of African huts at Mnazi Mmoja in 1920s resulted into Lumumba Street becoming a very strong edge by being laid very open to view. This open space helped much to create concentration of visual attention to observers walking close the edge. The new structures put in it such as Arnautouglou hall, Mnazi Mmoja hospital, etc. weaken this edge through reduction of visual attention to observers.

5.9.2 Penetration to an edge

The difficult in motion penetration which existed after 1961 was making the Msimbazi creek becoming weak edge. The extension of Twiga road crossing this edge has contributed to increase in visibility of this edge and its legibility.

5.9.3 Position of an edge

Western edge of Kariakoo South of Uhuru road in 1905 was the Msimbazi road from Msimbazi/Uhuru junction. Later this was no longer the edge, instead Shaurimoyo road became the new edge (see figures below).

5.10 Districts

5.10 Homogeneity

The high concentration of the Indian styled buildings in 1960s in Kariakoo ward especially close to Kariakoo market were helping much in making this area different from the other districts. The homogeneity in architectural style of buildings in the area was of much importance in making the area easily identifiable to visitors. Nowadays as we saw that the Indian style buildings

around Kariakoo market are being replaced by new structures. This resulted in weakening of identity of this district.

The big number of high rise of various styles that are coming in Kariakoo ward has helped in creation of more enclosure to the paths in this area as compared with any other district.

The higher concentration of business activities, people, cars, hawkers etc. along its edges and circulation paths than any other district in Kariakoo, has resulted to the paths of this district being characterized by high intensity of use than streets in other districts thereby strengthening the identity of this district.

5.10.2 Functional character

The numerous small scale industries, fabrication workshops, motor vehicle repair, garages and workshops in western Gerezani area and along the railway from Msimbazi road to Shaurimoyo road has become identifying characteristic of Gerezani ward from the other districts in Kariakoo.

The change in function of the church along Uhuru road to a big shop selling electronic equipments and the Africans residential houses changing their function or being demolished has resulted in losing the identifying character of the Mission Quarter area had. This area can now only be identified through the names of the streets which still exist

5.10.3 Network of paths

In Mchikichini the new irregular network of confusing paths and edges between the new single storeys buildings, in an unplanned area have become the identifying character of this edge from the other districts.

5.11 Nodes

5.11.1 Intensity of use

High intensity of use in Kariakoo market contributed much to strengthen this node. The market has become known even outside the country.

5.11.2 Accessibility and accommodation

The restricted accessibility to pedestrians has resulted into Mnazi Mmoja Ground to become simply a dominant barrier consequently weakening it. By limited access and accommodation of a government seat, cut off from the rest of the city, its meaning shifts from being a public space to being a government space. Though its meaning has change its joints have become very clear due to being surrounded by very active paths like Lumumba, Bibititi, Morogoro road and Nkrumah road.

5.11.3 Functional character of buildings facing the open space

Break in functional continuity of the buildings facing Kidongo Chekundu open space is nowadays witnessed. Recently commercial residential buildings are being put up on the northern side of this space. Furthermore there are very few plants/trees and bollards surrounding this area a situation that results in loss of visual quality of this space.

5.11 Functions of nodes

Most of the *Barazas* have changed their functions and others have completely disappeared as a result, these places which used to be strong nodes are no longer famous instead, very powerful and prominent *Barazas* like Saigon sports club have emerged that helps to restore the imageability of Kariakoo area.

5.11.5 Visual and functional continuity of buildings and facades

Destruction of visual continuity of facades is witnessed as the buildings at Msimbazi/ Uhuru roads junction have change their physical appearance due to different paints that are being applied on their facades. This node can no longer be identified using the continuity of facades' paintings.

The strength the imageability of the road junction nodes depends also on the functions of the buildings at these junctions. Buildings of public importance are the ones that heighten the imageability of the junctions. The demolition or change of function of the used to be independence pioneers residences from the roads junction has resulted in loss of prominence of the junctions which used to be very famous due to the presence of these buildings.

5.12   Landmarks

5.12.1 Space around Buildings

High figure-background contrast the Kariakoo market had due to the free space infront of it in 1970s, has become less due to the space being encroached by activities, stalls and a new structure.

Yanga SC building

The widening of Twiga street, has made an allowance for the Yanga sports club premises to be seen clearly by its observers thereby heightening its figure-background contrast charcteristic.

5.12.2 Heights of buildings

Due to being tallest of all buildings in Kariakoo, Ushirika building became a very strong landmark in Kariakoo area. The coming of other tall buildings than it has made the building to lose its visual dominance.

5.12.3 Concentration of association

Church along Uhuru road

The Church along Uhuru road was a very live, but now it is no longer a church. It is now used as a shop for selling electronic equipments. The building was being associated by many christians and other people but nowadays, it has lost its associations with the public as it used to be. The church is still a landmark through its form which is easily distinguishable from other buildings in the area, but image strength of this landmark has become lower than when it was functioning as a church.

Reduction by demolition of the distinctive buildings like the independent pioneers houses which were acting as scenes of historic events by being homes of independence fight pioneers meant reduction of strong landmarks. Most of these buildings had long associations with many politicians and the public in general.

5.13   Public Image

The public image of this area depends much on new (old revived) elements. Most of respondents are not aware of previous elements, perhaps is because the elements no longer exist in their original position or condition. This means the qualities of these old elements have changed.

The remaining old elements which are still live, seem to be much stronger as compared to new elements. This is revealed through listing exercise whereby 85% of the respondents listed old-live elements such as Kariakoo Market, DDC hall, Yanga Sports Club building etc leaving only 15% listing new elements as famous elements in the area. This implies that, if the demolished

old structures or spaces (element) would have remained or revamped they could have become very stronger than these coming new elements.

Most of respondents are not aware of new elements or new qualities of elements that are coming for example few people mentioned Tanzania breweries Limited building, no one mentioned KCB bank which is a very strong landmark due to its visual identity which strengthens its singularity or figure background clarity quality/characteristic.

Recognizing old famous structures or sites where these old structures were standing, was a very difficult exercise to most of people. This is revealed through the recognition exercise whereby only 29% of respondents were able to recognize and locate the sites where the structures were standing in Kariakoo area.

Almost 62% of the respondents use street names and famous buildings that are close to their business premises. House numbers have almost lost their significance in this exercise, perhaps is because of mixture of functions within one building, difficult in visibility (the numbers are small and very much hidden or not existing in some new buildings) since 0% of the respondent who use house numbers to instruct visitors or customers to his/her business premise.

Most of the shopkeepers are not aware of what is happening in the image elements. For example about 90% of respondents reported that there are no changes in the elements while they are there and anyone can observe. This resulted into them ending up saying no effects or difficulties they face on instructing their customers/visitors to their business premises.

6.   CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The intention of this study was to explore the effects of transformations that are taking place in the past and current Kariakoo's urban form on the its legibility. The study employed a case study method in Kariakoo area in Dar es Salaam.

Legibility of Dar es Salaam city and Kariakoo area in particular demanded an understanding of theories concerning the concept of Legibility of an urban form. Lynch (1960) provided this study with the key variables to understanding the concept. These are the five elements of image of a cityscape namely; Paths, Edges, Districts, nodes and landmarks. From studies by other authors in Dar es Salaam and Kariakoo, it is deduced that all of the five elements of image are found in Dar es Salaam particularly in Kariakoo's urban form. Moshi (2009) is among the authors who contributed much in identifying and analysing some elements such as landmarks and nodes which were introduced in Dar es Salaam and Kariakoo area since colonial occupation in the city. In Kariakoo these include the Ushirika building, DDC hall and the Kariakoo market which came in 1960s to 1970s, the KCB building in 2000s etc.

Users of Kariakoo's environment are also aware of the presence of some of elements of image. From fieldwork in Kariakoo, it was observed that, most of people in this area are aware of old survived elements which are associated with some important activity to the public. This was revealed by 85% of respondents who were able to identify strong nodes and landmarks like

Kariakoo market, DDC hall, Yanga Sports Club building which are all old-survived elements, leaving only 15% listing new elements as famous elements in the area. Furthermore the strength of these elements in Kariakoo differs from one another. It was observed that paths are the strongest of all other elements as 75% of respondents use to direct visitors.

The elements of image of Kariakoo area are undergoing Morphological transformations. Basing on the four morphological elements namely land use, buildings, plot, and street patterns as discussed and summarized by Moudon (1997), it was observed that all the elements are transforming though buildings are the most transforming than others. Transformations of other spatial qualities such as the concentration of activities along the paths, encroachments of open spaces by temporary activities were also observed in this area. Most of the studies on Dar es Salaam and Kariakoo in particular have shown the way these morphological elements are transforming in the area. From the field studies in Kariakoo, it was observed that the above discussed transformations have affected the legibility of all the elements of image of Kariakoo and Dar es Salaam at large. During mental map activity only 9% of respondents were able to show old nodes and landmarks which have changed their function as compared to 50% who indicated others which have not changed much their functions. During field observations, it was also observed that in some paths there are many tall structures coming which contribute to improving the legibility of these paths.

These changes though to a greater extent have eroded the imegeability of this area, they have somehow improved the imageability of this area. So there are many negative than positive effects on the legibility of this area.

6.2 Recommendations

6.2.1 Design concepts and approaches

6.2.2 General

i.   Every element of image to be put in an African urban setting must be associated with important activities which are of public relevance and that cut across all age groups e.g. market, cultural activities such as cultural dances etc since Africans refer more to the utilization than the other attributes (Ramadier & Moser, 1998).

ii. The Lynch's ten form qualities embodied in the African cities' and Kariakoo's physical form should be revamped through physical improvement of the elements of image within these settings.

6.2.3 Specific

Stakeholders in physical development of Kariakoo area and the Government through the Dar es Salaam city council should do the following in order to make the area legible after it has undergone transformation.

PATHS

i.   Ensure that all buildings (fig.6.2) that face some prominent paths like Swahili street become of uniform architectural styles in order to strengthen visual continuity of buildings' styles and hence legibility of the paths.

ii.   Plant trees (fig.6.1) along all paths in Kariakoo area to enhance visual continuity of the paths and for filtration of noise and smoke from cars and protection of pedestrians from solar radiation.
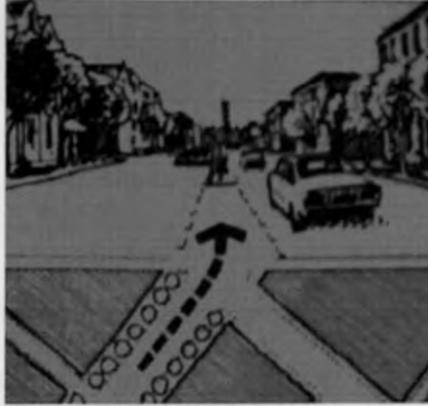

Figure 6.1: Planted trees along paths to enhance visual continuity
Source: Alcock *et al* (1985, p. 46).

iii.   Place buildings with public importance (fig.6.3) on plots along road junctions in order to strengthen imageability of roads junction nodes.

iv.   Construct pavements for pedestrian walkways along all paths in Kariakoo to improve their tactile qualities.

v.   Existing or new buildings that physically and visually terminate some important paths like Congo Street should be given some hierarchy by articulation of its physical form or by giving them an activity that is relevant to public so as to make them act as strong termini of the paths and thereby enhance clarity of direction to pedestrians using the terminated paths.

Figure 6.2: A prominent building terminating a path
Source: Alcock *et al* (1985, p. 46).

EDGES

Discourage the construction of structures within Mnazi Mmoja open space in order to make Lumumba road open to view thereby increasing its visual attention to observers and making it a strong edge of Kariakoo area.

DISTRICTS

Restore back the qualities of the elements such as functions of buildings used to be independence pioneers buildings in Gerezani sub district and the church building in Mchikichini sub district that were heightening homogeneity character within these sub-districts in order to restore back their original strong homogeneity characteristics.

NODES

i.   Construct buildings with public importance along the plots located along junctions of Lumumba/Morogoro, Nyerere/Msimbazi, Uhuru/Msimbazi, Lumumba/Nkrumah, Msimbazi/Morogoro roads in Kariakoo in order to strengthen their imageability.
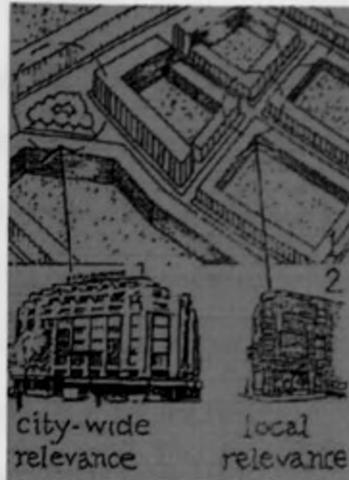
Figure 6.3: Buildings of public importance at the junctions
Source: Alcock *et al* (1985, p. 53).

ii. Discourage the restriction of accessibility to pedestrians to Mnazi Mmoja open space so as to make it a strong node and avoid it from continuing being simply a dominant barrier rather than a strong node.

iii. Introduce an overpass for pedestrians to cross Lumumba road from Kariakoo to Mnazi Mmoja in order to improve accessibility to this open space as it is currently surrounded by very busy roads which weaken accessibility to the open space.

iv. Restrict the functions of buildings that are to surround the open spaces like Kidongo Chekundu open space to buildings of public importance so as to strengthen its singularity through functional continuity of the buildings facing the space. Furthermore encourage planting of trees along its edges and increase intensity of use to enhance its visual prominence and dominance.

LANDMARKS

i.   Vacate the space around Kariakoo market by removing the stalls and other activities that currently occupy this space in order to heighten the figure-background contrast quality of this landmark building.

ii.   Maintain/conserve the heights of strong landmarks by limiting to lower heights other buildings so as to perpetuate the visual dominance character of the landmarks like the Ushirika building which was the first tallest building in Dar es Salaam city.

iii. Change function by restoring back the function of the building which used to be a church along Uhuru road in order to strengthen its association with public.

FORM TREATMENTS

Paths

i.   Intensify the construction of new high-rise buildings of uniform heights or vertical extensions of existing buildings that line some prominent paths like Congo, Uhuru, Aggrey, Sikukuu, Tandamti, Msimmbazi, Mkunguni, Swahili and Kipata or in sub-districts with high land values or economic importance like Kariakoo sub-district, in order to create more enclosure (fig.6.4) and thereby enhance its visual dominance and prominence.

ii.   Increase encroachments to fill the spaces left between buildings (fig.6.5) along some paths like the Congo shopping Street in Kariakoo to increase its enclosure. Encroachments should also be avoided in the remaining paths which are not so special in order to increase the permeability and visual scope in the area.
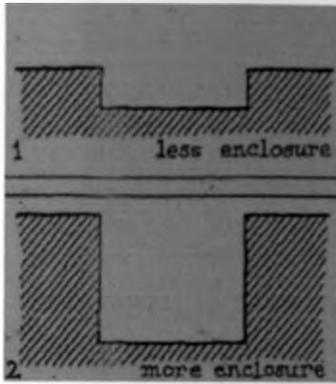
Figure 6.4: Less or more enclosures
depending on building heights

Source: Alcock *et al* (1985, p. 52).

Figure 6.5: Less or more enclosures
depending on space left between buildings

Source: Alcock *et al* (1985, p. 52).

Node

Depending on the functional roles of the linking streets and the level of public relevance of the activities in the adjacent buildings facing the node, the following are to be done.

i.   Offsett junctions (fig.6.6) that are made by famous paths like Tandamti, Mkunguni, Aggrey that terminate on Muheza street in order to increase their sense of enclosure.
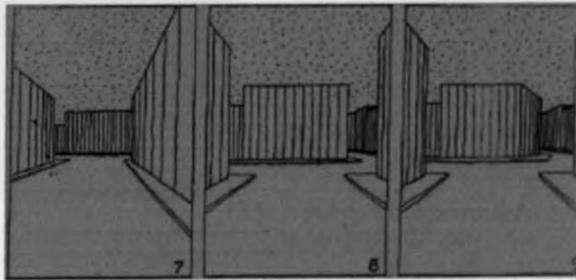

Figure 6.6: Offsetting of junctions. Source: Alcock *et al* (1985, p. 52).

ii.   Create splayed corners (fig.6.7) in busy and hectic junctions like the one which is made by Congo and Uhuru roads in order to deflect the eye of the pedestrian moving along Congo to Uhuru street and also to increase concavity of the space at this junction.
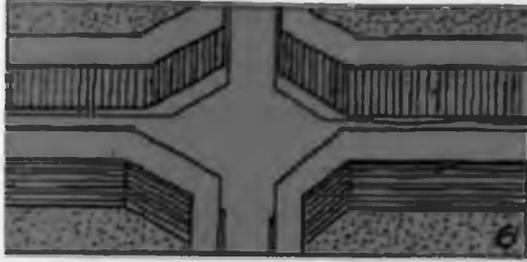
Figure 6.7: Splayed corners at roads' junctions nodes.
Source: Alcock *et al* (1985, p. 52).

iii.   Form concave nodal spaces (fig.6.8) at famous road-junctions like the Msimbazi/Morogoro, Lumumba/Uhuru, Uhuru/Msimbazi, Nyerere/Msimbazi, Lumumba/Nkrumah, Uhuru/Kawawa, Lumumba/Morogoro and Shaurimoyo/Nyerere road-junctions in order to increase legibility of the junctions.

iv.   Create nodes along Msimbazi road which will be used as markers (fig. 6.9) in order to help users of this path to be able to easily locate themselves within this curved path and within the Kariakoo's path system as a whole.

Figure 6.9: Markers along curved paths. Source: Alcock *et al* (1985, p. 55).

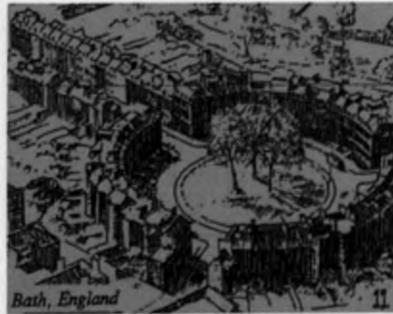Figure 6.8: concave nodal space at roads' junctions nodes. Source: Alcock *et al* (1985, p. 53).

6.3 Approaches by governments

African governments through responsible authorities should do the following;

i.   Stop laxity in enforcing the development controls and start to guide the growth of her cities.

ii.   Invest in legible city projects and policies for new cities and for guiding the growing cities.

iii. Identify, acquire and conserve/preserve the structures or spaces of historic values/monuments such as buildings of famous independence pioneers in Kariakoo, the prominent paths and other elements of image of particular cities.

iv. Adjust the urban planning methods of achieving greater legibility to fit African urban contexts and use them to guide development of urban spatial qualities in Tanzania and African cities at large.

6.4 Recommendations for Further Studies

The study has revealed a need of more knowledge on what happens to the legibility when our settlements undergo physical transformation. Further research need to be done in applying the Concept of legibility in settlements upgrading projects in Tanzania so that to be able to catch up with the rapidly growing informal settlements by focusing on achieving a upgraded settlements with reasonable spatial qualities especially legibility of that particular settlement.

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APPENDICES

APPENDIX 1:

INTRODUCTION LETTER COLLECTED FROM DEPARTMENT OF

ARCHITECTURE OF UNIVERSITY OF NAIROBI.

UNIVERSITY OF NAIROBI

School of the Built Environment

DEPARTMENT OF ARCHITECTURE & BUILDING SCIENCE
E- mail: architecture@uonbi.ac.ke

Our Ref: UON/CAE/ABS/6/14   14th December, 2011

TO WHOM IT MAY CONCERN

RE: EMMANUEL J. LIOMBO B52/63841/2010

This is to confirm that the above named is currently pursuing his Master in Architecture in the Department of Architecture & Building Science, University of Nairobi.

He is currently carrying out a research on **Effects of Urban Housing Transformation on Legibility of The City of Dar-es-Salaam which involves**

- Taking photographs.
- Interviewing people.
- Visiting several institutions to collect secondary data and among others.

Any assistance accorded to him will be highly appreciated.
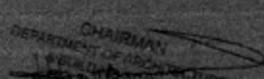
Arch. Erastus Abonyo
CHAIRMAN
DEPT. OF ARCHITECTURE & BUILDING SCIENCE

/mao.

130

APPENDIX 2:

LETTER OF PERMISSION FROM DAR ES SALAAM CITY COUNCIL TO CONDUCT STUDY AT KARIAKOO AREA

ILALA MUNICIPAL COUNCIL
ALL COMMUNICATIONS TO BE ADDRESSED TO THE MUNICIPAL DIRECTOR

P.O. BOX.   20950
PHONE: 2128800
FAX NO.   2121486

MUNICIPAL OFFICE
ILALA

REF. NO. IMC/FP – 6/6/6

17 January, 2012

TO WHOM IT MAY CONCERN

Re **INTRODUCTION LETTER**

I am hereby introducing to you **Mr. Emmanuel J. Liombo**, that he is a student from University of Nairobi – Department of Architecture.

He is working on a research on Architectural matters that will form part of his qualifying exams. He has been allowed to collect data from within Ilala Municipal from the date of this letter until June 2012

Please provide him with information he needs.
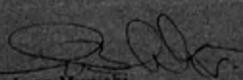
Leon Munishi,
For **MUNICIPAL DIRECTOR**,
ILALA MUNICIPAL COUNCIL

QUESTIONNAIRES OF A FIELD STUDY ON LEGIBILITY OF KARIAKOO AREA

Information on public Image (Shopkeepers)

DODOSO YA UTAFITI JUU YA URAHISI WA UELEWEKAJI WA ENEO LA KARIAKOO KWA WAGENI

Jina la
mwekezaji :

Mtaa/barabara biashara ilipo:
LIVING STONE

Aina ya biashara:
HIGH QUALITY DIGITAL PLINTERS

Jinsia: KIUME

Tarehe: 2/2/2012

Elimu: FORM IV

Tafadhali weka alama ✓ **mbele ya jibu sahihi**

Ni vielelezo gani umekuwa ukitumia kuwaelekeza watu mahali biashara yako ilipo?

    a. Majina ya mitaa ✓

    b. Namba za nyumba

    c. Majengo maarufu yaliyo karibu na mahali biashara yako ilipo

    d. Majengo marefu yaonekanayo ukiwa mbali na eneo la biashara yako

    e. Mengineyo, Tafadhali elezea.................

Je kuna mabadiliko yoyote katika vielelezo ulivyokuwa ukitumia awali?

    a. Ndiyo

    b. Hapana ✓

Kama Ndiyo, je kutokana na mabadiliko hayo, Kuna ugumu au urahisi wowote unakutana nao wakati wa kuwaelekeza watu mahali biashara yako ilipo?

    a. Ndiyo ✓

    b. Hapana

Kama Ndiyo, Ni ugumu au urahisi gani huo? Tafadhali
elezea... Ndiyo ugumu hupo, kuna baadhi ya watu awajui mitaa ya kariakoo.

1

APPENDIX 4:

QUESTIONNAIRES OF A FIELD STUDY ON LEGIBILITY OF KARIAKOO AREA

Information on Structures/ spaces of historical values (Antiquities department)

APPENDIX 5:

QUESTIONNAIRES OF A FIELD STUDY ON LEGIBILITY OF KARIAKOO AREA

Information on Control guidelines (Director- Ilala Municipal council)

QUESTIONNAIRES OF A FIELD STUDY ON LEGIBILITY OF KARIAKOO AREA

Information on Control guidelines

Name of organization and department ... ILALA MUNICIPALITY , URBAN PLANNING

Person interviewed ... DAWI LULU

Position ... TOWN PLANNER

Education ... BSc URBAN AND REGIONAL PLANNING

Sex: ... MALE

Date: ... 08/02/2012

Put a mark ✓ behind chosen answer

What do you understand by a legible environment?

Please describe: IES a clear environment which show street by naming in a specified map

Are there policies or guidelines that control spatial transformation towards creating legible environment in Ilala Municipality?

a. Yes ✓

b. No

If No, What do you think should be done to ensure achievement of legible environment in Ilala Municipality?

Please describe...

If yes, what are the activities proposed in the guidelines for achieving legible environment in Ilala Municipality?

a. Street naming, signs, maps to assist visitors in their way finding

b. House numbering ✓

c. Street lighting

d. Improving pedestrian environments e.g. restricting vehicles.

e. All of the above

f. Others, please specify

1

APPENDIX 6:

BASIC OFFICE INTERVIEW QUESTIONS AND REGISTRATION SHEET

5

1. Taja vielelezo maarufu vinavyoweza kumsaidia mgeni kutembea bila kuulizauliza katika eneo la Kariakoo

Majengo maarufu kama soko, nyumba za watu maarufu, kumbi za mikutano, klabu
VALLEY VIEW HOTEL
KONGO BAR
YOUHANA HOTEL/NYANWEZI
NYATI STR
FARU STR
SOKO KIKOO
FAYA BP STATION
CCM LUMUMBA
MSIMBAZI POLISI
14To MSIMBAZI
TBL
S/NSINGA UHURU
S/SECONDARY BOIPAM
TFF
KARUKOE SOKONI
MACHINGA COMPLEX
OFISI YA MEDANI
MSIMBAZI CENTER
ALIDARAKAN SECONDARY
YANGA SCLUB
SIMBA SPORT CLUB
IDRISA MSIKITI

1

KASWIKI 36
KIGAM IFA IGA-EZWEA
AKIBA BUS STAND

Barabara/Mitaa

maarufu
CONGO BR
NYAMWEZI BR
MSIMBAZI BR
UHURU BR
SIKUKUU
LIVINGSTONE
TWIGA STR
PUGU/NYERERE
BIBI HUHAMED ROAD
TANGAM BR
SWAHILI BR
DDC KARIAKOO

Alama maarufu kama
miki, kijiwe cha kahawa,

maara
MPERA MPERA KIJIWE
MLIHORO/CONGO KIJIWE
MPAMBEM B - MATH
KUL DA KUAWE
DAP KIBABAM

STAND YA ZAMBIA
TANDAMI/MSIMBAZI CLUB
MAYTA STREET

Vielelezo vingine

2. Onyesha vielelezo hivyo hapo juu kwa kuweka alama vinapopatikana katika ramani (iliyoambatanishwa na karatasi hizi za maswali)

3. Fanya kama unamuelekeza mgeni anayetoka pointi "a" jinsi ya kufika pointi "i" kwa urahisi na kutoka pointi "g" jinsi ya kufika pointi "c" kwa urahisi kwa kutumia vielelezo hivyo hapo juu huku ukichora njia anazoweza kupita mpaka kufika hizo sehemu

4. Chora njia/mtaa miwili ambayo unaikumbuka vizuri, halafu onyesha matukio, au vielelezo muhimu mfano. wauza matunda wengi, magari mengi n.k. ambavyo utakutana navyo ukiwa unapita katika mtaa huo

5. Taja maeneo ambayo yanaonekana kuwa na tabia za kipekee na sifa zake, mfano maeneo yenye watu wengi, majengo marefu meangi, kazi za ufundi n.k.

6. Nielekeze vitu vifuatavyo viliko

Soko la Kariakoo
TANDAMTI / MKUNGUNI
NYAMWEZI / SWAHILI
....
....

Meeza wa uhuru
BARABARA YA UHURU
NA MSIMBAZI
....

Msikiti wa Mtoro
~~LIVINGSTON~~ BARABARA
NA MAWIYA STREET
....

Msikiti wa Manyema
MAFIA STR / NA
....

Msikiti wa Idrisa
TANDAMTI / LIKOMA
....

Kanisa la KKKT
BIBI TITI ~~chuma~~ / ~~AROME~~
MCHIKICHI STR / LIKOMA

Seigoni klabu
TANDAMTI / LIVINGSTONE
....

Ofisi mahali ilipozaliwa TANU
LUMUMBA BR / MNAZI
MMOJA S / MIIAGI

Ofisi za afisa watendaji, wenyeviti wa serikali za mitaa mbalimbali, nyumba za mabalozi wa nyumba kumi unazozijua
KATA YA JANGWANI
MTAMBANI BBA'
KATA YA MCHIKICHINI
TUMEE ATMANAN (10) ~~JANGWAN BUNDO~~
DEO KIBABAM MATUMBA'A'
TAMBAZA ~~RUNDUD~~ TATUBAZA IMUKWAMEN
WA SERIKALI YA MKSAN MSTAMBAKI BY
KOSIM — MTAMBAN 'A'
AZIMIO MANAZI MMOJA
SULTAN — LIKOMBAZI

2

Vituo vya daladala

Shule ya uhuru
MSIMBAZI STR / SHAULE nueyo / GEREZANI

Congo
CONGO STR / UHURU BZ

....

Bakhresa
LIVINGYSTONE / AGGREY STR

Msimbazi polisi
MSIMBAZI STR / MKUNGUM STR

Kariakoo
MKUNQUM STR / NYAMWE 21 STR / SWAHILI STR

Mchikichini
UHURU BARABARA / KARUME SOKONI / TBL

Fire
MOROGORO ROAD / BP STATION

....

Baridi
BI-TITI MUHAMMED ROAD PEACOOK HOTEL / KILWANGA PHARMACY

Mnazi Mmoja
S / MSIMBI / HOSPITALI YA MKOA, MNAZI MMOTA / UWANJA HABIB MOHA

Ukumbi wa DDC
KARIAKOO — CONGO / AGGREY STR

Ukumbi wa zamani wa Kilwa Jazz
KARIAKOO CONGO STR / AGGREY STREET SASA DDC JA
Nyumba alimokuwa akiishi Mzee Mohamed Juyate (katibu wa TAA na baadaye katibu mtendaji wa TANU)

....

Nyumba alimokuwa akiishi Mzee John Lupia (Raisi wa kwanza wa AA)
MSIMBAZI / UHURU ROAD

....

Nyumba alimokuwa akiishi Mzee Abdulwahid Sykes (Raisi wa kwanza wa TAA)
GEREZANI

....

....

Nyumbani kwa Mzee Dossa Aziz ambapo Sunday Baraza ilikuwa ikifanyika
MAGOMENI / DOSSA STREET

....

....

Kiibchokuwa Kijiwe cha mnada cha Sheikh Suleman Takadir
GEREZANI MAGOMENI

....

....

Nyumba alimokuwa akiishi Mzee Omari Londo
MUHEZA

....

....

3

7. Kwa nini barabara zhatazo zilipewa majina hayo

Pugu road/Nyerere road

KWA SABABU NI MWESHA WA BARABARA IMPORTINA AANGALOO ULWAN MBUGO

Lumumba

JINA LA BASI WA PATRIX LUMUMBA

Shaurimoyo

NENO LINALOZUNGA KAMA USI USHAUBI MOYO

Nkrumah

NI BASI YA WA KWANZA WA GHANA KWA ME MERUNAH

8. Kwa nini maeneo yafuatayo yamepewa majina hayo?

Kariakoo

KUTOKANA NA UKARIBU WA VITU YAANI KARIBU NA PALE WATU WANAITA PAKAA DARAKUWA

Gerezini

MIMI NAONA ILI KAMA WATU WANAOPITA WA NABKUFNDA KUFUNGWA

Jangwani

ENEO LA WAZI LIPO KAMA JANGWA NI ENEO LENE MIFEREJI NSIMBAZI /BEWRIES TBL

Mchikichini

NI JINA LA ENEO PIA

NI SMILE JA MSINGI NUMBKICMA PANOJA NA KIWANDA COMBIA TBL

Mnazi Mmoja

NI JINA LA ENEO PIA MSIWILE S/MSINGI M/MASOM /LUMUMBA UWANJA WA MAOMASKO/MIKUTANO, HOSPITALI NA ANOTOBOLO

Bonde la Mananbazi

ENEO LA WAZI LIPO KAMA JANGWA NA KUFUSEZI UNEAZIA MBALISANA YLA MIKU MUROGUL BE NSIO UNAMAALISAA /KADIDKA KAMPUM

Mishani Kota

ILIKUWA KUNA NGUIMBO ZA KOTA ZILIZOJENGWA NA WAMISHTONABZ HAPO ZAMANI NYUMBA ZA KUFANANA

9. Vielelezo gani unaweza kutana navyo umapokuwa katika mtaa wa Congo?

BASABAKA YA CONGO/COMO BAR NBOULI INN/ROYAL HOTEL BIG BON STATION/ SOKO LA MITUMBA NA MAVAZI JA KISASA HAIKU JIBAN KUAA SOKO LA K/KOO

10. Ni mtaa gani maalumu kwa vifaa vifuatavyo,-

Vyombo vya ndani

KABIAKOO SOKOM MBAM KONGO/

Vifaa vya elektroniki kama simu
MSIMBAZI BARABARA
UHURU BARABARA

Mafriji, viyoyozi, AC
KARIAKOO / GNG
KARUME

Mazao ya mashamba
MYAMWEZI / KARIAKOO
ILALA SOKONI

11 Naomba nielekeze mipaka ya maeneo
yafuatayo
Kariakoo *JANGWANI*
MNAZI MMOJA
YANGA SPORT CLUB
SOKONI LA K/KOO

Gerezani
KAMATA
UHURU BARABARA

Jangwani
MTO MSIMBAZI
MCHIKICHINI
JANGWANI/BONDENI

Mchikichini
TBL / KARUME
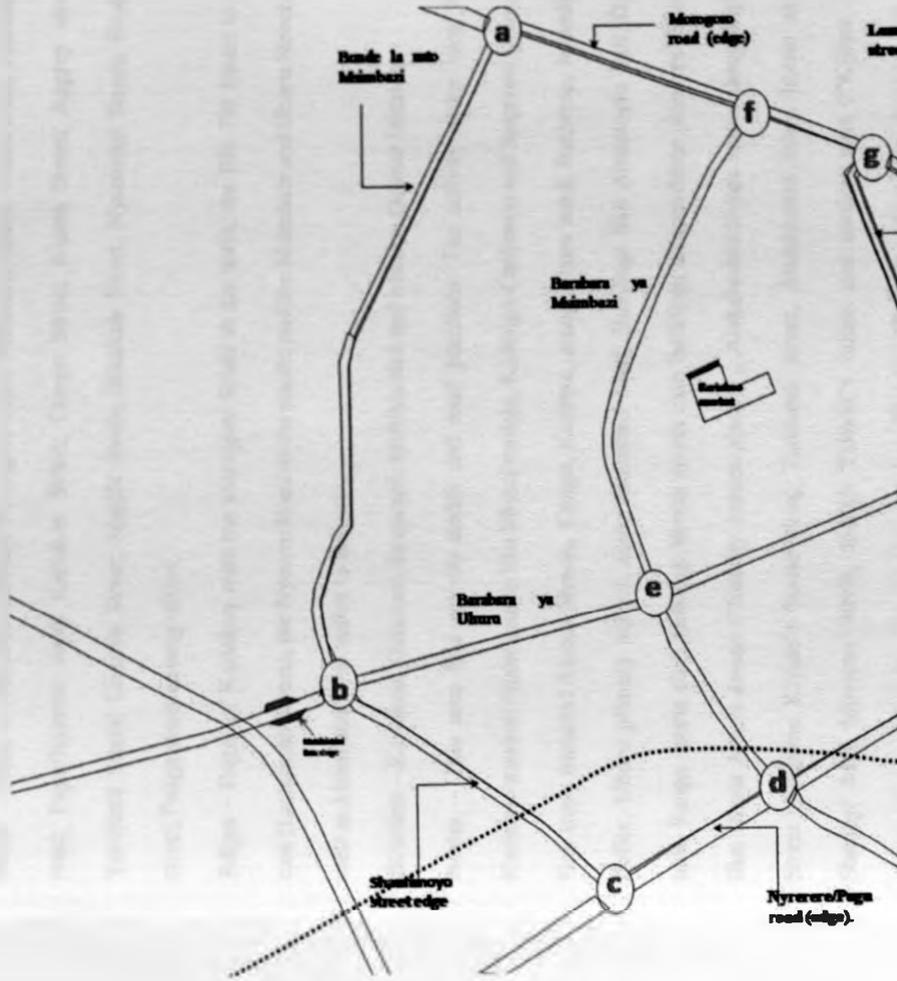*MCHIKICHINI BONOGNI*

Mnazi Mmoja
ULANJA WA MADEMSONI / LUMUMBA
BIBI TITI KUHUNCO / ARJENTAL YA MAATI.

Bonde la Msimbazi
MTO WA MSIMBAZI / DARAJA LA BROKOO
MTO YA KOLAWA / KASIMA / AMENGATA

Misheni Kota
BELGIAM

A3 SIZE XEROXED PAPER
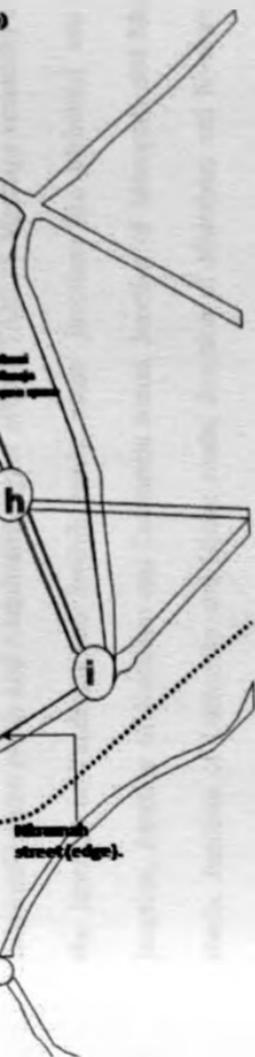
APPENDIX 9

OUTLINE OF ELEMENTS OF IMAGE BEFORE INDEPENDENCE IN

1961

The elements are Paths, Edges, Districts, Nodes and Landmarks.

Paths – Paths in this area included Morogoro road; Msimbazi street; Uhuru road; Lumumba road; Pugu/Nyerere road; Kariakoo Street; Congo Street; Kipata Street; Aggrey street; Tandamti Street; Likoma Street; Magila Street; Sikukuu Street; Nyamwezi Street; Swahili street;Twiga street among others.

Edges – Edges of Kariakoo were the Morogoro Road to the north, the Biti Titi Street to the east (Lumumba Street), the Nyerere Road to the south, and the Msimbazi and Uhuru Streets as well as Msimbazi river valley to the west.

Districts – Kariakoo, Gerezani, Jangwani, Mchikichini and Mission Quarter Districts.

Nodes – This area had activity nodes and road junctions. The activity nodes were like Kariakoo market; Open spaces like Mnazi mmoja, Kidongo Chekundu and Jangwani grounds; Bus stops included Mnazi Mmoja, Congo, Karume, along Uhuru road; Bakhresa, Msimbazi Police, Uhuru primary school, along Msimbazi road; Buildings like Arnautoglo hall, DDC hall, Yanga sports club building, Simba sports club building; independence pioneers' houses like Dossa Aziz's house ("Sunday baraza place") , Abdulwahid Sykes house along Kipata Street ,Mshume Kiyate's house along Tandamti street, Abdulwahid Sykes house along Stanley/ Max Mbwana Street, Sheikh Takadir's house and auction mart ("Kijiwe cha Kahawa") , John Lupia's house (AA offices), Clement Mtamila's house along Sikukuu/Zaramo roads and Abdulwahid Sykes office (TANU'S Meetings verandah) along at the junction of Tandamti and Swahili roads; roads' junctions like Msimbazi and Uhuru junction, Junction of Kariakoo and Lumumba roads, Junction of Morogoro and Msimbazi roads, Junction of Lumumba and Uhuru roads, Junction of Msimbazi and Nyerere roads, Junction of Morogoro and Lumumba roads, Junction of Nyerere and Lumumba roads and Junction of Shaurimoyo and Nyerere roads.

Landmarks – The landmarks are like kariakoo market, DDC hall, Ushirika building, Simba SC building, Yanga SC building, Uhuru torch, Uhuru tower , Republic fountain at Mnazi mmoja open space.

APPENDIX 10

MENTAL MAP ANALYSIS

SUB-DISTRICTS		KARIAKOO					JANGWANI					MCHIKICHINI					GEREZANI					
RESPONDENT		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
PATHS																						■
																						■
																						■
																						■
																						■
EDGES																						■
DISTRICTS																						
																						■
NODES																						
LANDMARKS																						

MAP ANALYSIS	■ Element noted by a researcher