

Noel J. O. Okello

Our way or the highway?

A study of the reframing of transformed road transportation infrastructure in the Nairobi Metropolitan Region.



Arkitektur- og designhøgskolen i Oslo
The Oslo School of Architecture and Design

OUR WAY OR THE HIGHWAY?

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ISSN: 1502-217x

ISBN: 978-82-547-0303-8

CON-TEXT: nr 87

UTGIVER

Arkitektur- og designhøgskolen i Oslo

ILLUSTRASJON OMSLAG:

Noel J. O. Okello

TRYKK:

Akademika forlag AS

Hovedveileder:

Professor Karl Otto Ellefsen

Bi-veileder:

Professor Emeritus Sven Erik Svendsen

Bedømmelseskomite:

Professor Wilbard J. Kombe

Professor Winnie V. Mitullah

Anders Ese (Ph.D.)

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ACKNOWLEDGEMENTS

First, I thank the Government of the Kingdom of Norway for its generosity in providing the funding for my research studies in Oslo and in Nairobi.

I thank my supervisors at the Oslo School of Architecture and Design (AHO) who generously made time for discussions on my project and diligently provided guidance for my research from the time I proposed it. Thanks to Professor Karl Otto Ellefsen and Professor Sven-Erik Svendsen for their attention to detail and for their help in structuring the study. Thanks also to Professor Edward Robbins for an irreverent sense of humour, frequent reminders about the ironic politics of the Government of the Republic of Kenya, and for drawing me to a clearer genre of writing.

I am grateful to the three consecutive Research Administrators at AHO: Birgitte Oppegaard Pollen, Steinar Heldal, and, Reier Møll Schoder for helping me to settle in Oslo. I thank the Head of Research Administration at AHO, Brita Nøstvik, who was kind enough, on the very first day, to allow me to make a phone call from her office to my family to assure them that I had arrived safely.

I extend my gratitude to the staff of the Institute of Urbanism and Landscape for their camaraderie. I thank the Head of the Institute of Urbanism and Landscape, Marianne Skjulhaug for making all students feel welcome at the school and for being interested in the situations of our families and our countries during times of turmoil. I thank Peter Hemmersam for making me feel welcome in Oslo, discussing my progress from time to time, organising institute seminars and bringing my attention to useful references for my PhD project. I thank Architect Anders Ese of Rodeo Architects and Professor Inger Lise Syversen for their friendship, my harried but affable officemate Elisabeth Sjødahl, and the ever kind Lisbet Harboe.

I am grateful to the coordinators of the PhD School in autumn 2012: Professor Andrew David Morrison, Professor Henry Nsaiszeka Mainsah and Professor Tim Anstey. They accorded us invaluable opportunities to clarify our ideas, to collaborate with and understand the works of intellectuals in other design fields, and, to present our own work.

Thanks to the staff of the IKT department at AHO namely; Frode Gether Rønning, Sivaganesh Vadivelu, Vidji Sivarajah and Andre Bakkehaug, for their help in sorting out computer hardware, software and network problems.

I would like to thank my friend and fellow PhD fellow Edwin Oyaro Ondieki for making the slog at AHO bearable through conversations at lunch and the sharing of that

nostalgic yearning for a return to Nairobi. I also thank Christian Parreno for the many enlightening discussions we had on our research projects. Thanks also to my peers at AHO; Kjerstine Uhre, Ann-Sofi Rönnskog, Marcin Wojcik, and Charlotte Blanche for making the 2012 PhD School colourful.

I am grateful to the other PhD fellows with whom we had many fruitful discussions at the school over coffee, lunch and seminars including Barbara Elisabeth Ascher, Benyam Ali, Eskild Naerum Bakken, Ida Sofie Gøtzsche Lande, Jun Ma, Collins Makunda and Patrycja Perkiewicz.

I thank the Kenya Students Association of Norway (KESAN) and the Association of Kenyans in Norway (AKIN) for organising interactions with Kenyans living in Norway. Their camaraderie and celebration of Kenyan festivals reminded me of home.

I appreciate the help in collecting and recording data during my fieldwork from undergraduate students of architecture at the Jomo Kenyatta University of Agriculture and Technology's School of Architecture and Building Sciences, namely: Tonny Rop, Maureen Kamari, Laban Kiprono, and Kelvin Odhiambo. I also thank the people I encountered and interviewed for my case studies along the highways in the Nairobi Metropolitan Region for their willingness to share their thoughts, their actions and their everyday lives with me. Without their openness and cooperation the research study would not have been feasible in its present form.

Finally, I thank my family for enduring my absences during my attendance of the AHO PhD School. I owe a debt of gratitude to my wife Dr. Susan Njeri Omollo for taking great care of our children during my absence. I sincerely apologise to my daughter Kimberly and son Kelsey for frequently having to put up with mom's bewildering explanation, "*Daddy is attending school for grown ups.*"

ABSTRACT

The Global South is experiencing unprecedented road infrastructure transformations accompanied by foreseen and unforeseen effects on everyday life. What are the characteristics of these transformations and what are their implications on the urban process? In this thesis I argue that varying adaptations to the transformations of road space in Nairobi herald a shift from the traditional static and decidedly situated urban settlement approaches and design interventions to a focus on movement, transience, product and signage in cities of the Global South. It is axiomatic that movement and mobility precede and sustain the entire urban process and that movement, as a social armature, fundamentally defines the nature of urbanism. Spatiality is immanently embedded in movement and the spaces of flows are also spaces of the most spirited contestation. This spirited contestation has two complementary meanings depicted in current debates on cities in transformation and confirmed to be true by my own empirical observations in Nairobi: first, that the space of flows, *“is fought over by various actors and driving forces that (...) claim it, often in an inevitable conflictual manner, the right to live in it, work in it and enjoy oneself in it using its resources in a way suitable to ones own needs”*, (Paloscia and Inura, 2004), and, second, that these spaces of flows, *“are not accepted as such in their present economical, physical, social and cultural configuration, [they are] rejected for what [they offer] their inhabitants (and non-affluent visitors), which seems very little compared with what the metropolis takes and demands from a great number of them.”* (Paloscia and Inura, 2004). To support my assertions I present cases of urban spaces along transformed road corridors and intersections in the Nairobi Metropolitan Region with a specific focus on everyday life experiences and the connections created or altered in unintended ways. I argue that such enframing and subsequent reframing of existing connections (and the resultant spatial compromises) suggest ongoing urban processes that can neither be fathomed by the current tools employed by planning agencies in Kenya under the aegis of the Ministry of Transportation and Infrastructure nor examined by compartmentalized classifications of informality. My thesis challenges static notions of hierarchical and diverse informalities. I promote, in lieu, a diachronic view of urban transformation not just as a historic process, but also as an often complex, spontaneous and evolving process that continually reconfigures space in ways that excoriate master planning tools as applied in the context of the Global South. I adapt space-time diaries, satellite mapping and empirical observations to interrogate the assumptions of planning and also to capture and present aberrant urban processes connoted by transience and movement in Nairobi’s recently transformed road space. I compare real-time observations of a variety of quotidian experiences to the visions and predictions of politicians and to the

formal tools development economists, urban planners and civil engineers employ in justifying and propagating their positions on road transportation infrastructure in the Global South. Finally, I discuss what the revealed discrepancies imply for urban space design. I find as yet unrecognised categories of informality based on the mobility on highways and the shifts and slides of everyday life in Nairobi. Using an analytical framework developed from these categories and the links between different perspectives of infrastructure in the Global South, I argue that it is intellectually false to make recommendations premised on the mutual exclusivity of the processes and actions of different actors involved in infrastructure transformation. I suggest a “thinking machine” for infrastructure transformation projects that synthesises multiple elements including their timing, their inputs, their contexts and their effects.

ABBREVIATIONS

AC – Asphalt Concrete

AfDB – African Development Bank

CBD – Central Business District

CCN – City County of Nairobi

CCTV – Closed-Circuit Television

CSUD – Center for Sustainable Urban Development (at The Earth Institute of Columbia University)

CV – Curriculum Vitae

DBM – Dry-Bound Macadam

FoNNP – Friends of the Nairobi National Park

GCS – Graded Crushed Stone

GDP – Gross Domestic Product

GSU – General Service Unit

JICA – Japan International Co-operation Agency

JKIA – Jomo Kenyatta International Airport

KARA – Kenya Alliance of Resident Associations

KeNHA – Kenya National Highways Authority

KeRRA – Kenya Rural Roads Authority

KIE – Kenya Institute of Education

KNCTIP – Kenya-Northern Corridor Transport Improvement Project

KRA – Kenya Revenue Authority

KRB – Kenya Roads Board

KRC – Kenya Railways Corporation

KURA – Kenya Urban Roads Authority

LAPSSET – Lamu Port Southern Sudan-Ethiopia Transport
M-Pesa – Mobile Money Transfer Service
MHIP – Mombasa Highway Improvement Project
MOW – Ministry of Works
MPC – Maputo Development Corridor
NET – National Environmental Tribunal
NGO – Non-Governmental Organisation
NIUPLAN – Nairobi Integrated Urban Development Master Plan
NMR – Nairobi Metropolitan Region
RVR – Rift Valley Railways
SAPs – Structural Adjustment Programmes
SGR – Standard Gauge Railway
THIP – Thika Highway Improvement Project
TLB – Transport Licensing Board
TOL – Temporary Ownership License
WCED – World Commission on Environment and Development

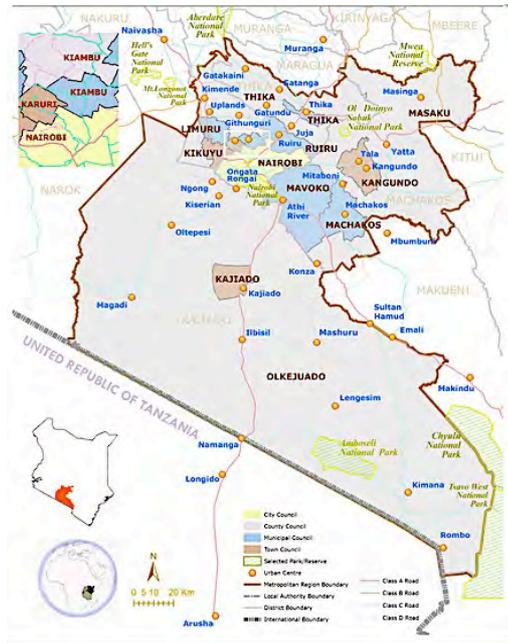
Chapter 1

1 INTRODUCTION TO THE STUDY

1.1 PROBLEM STATEMENT

“The word ‘transformation’ mesmerises us these days. So many of us seek a change that is as dramatic as it is quick.” –Sunny Bindra

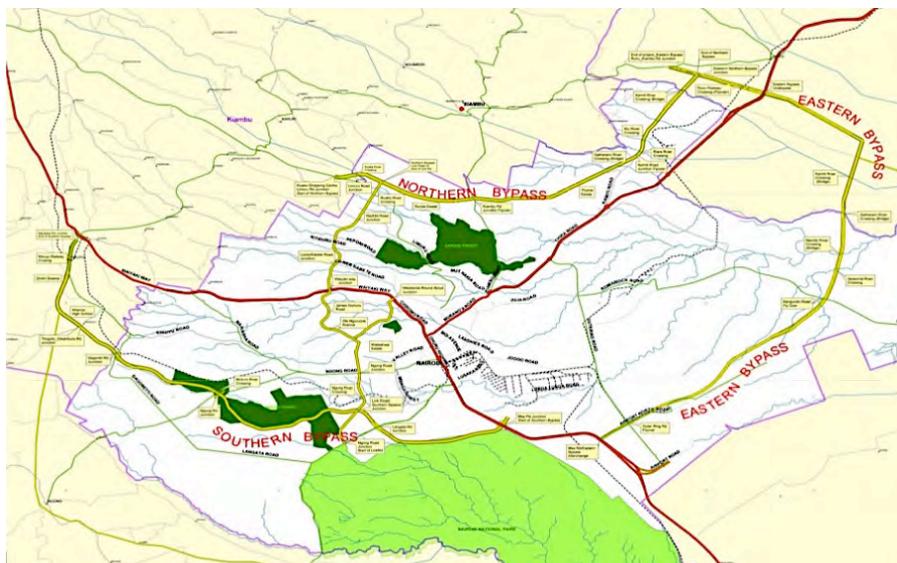
The city of Nairobi is transforming. Since 2009 this transformation has been most visible in the new constructed physical elements, the emergent configurations and the changing everyday use of its major road transportation networks namely, the Thika Superhighway, the Mombasa Highway, the Lang’ata Road, the Northern Bypass, the Southern Bypass and the Eastern Bypass. The problems posed by this transformation are manifold. First, these transformed road transportation infrastructure networks disrupt urban services in areas with large and mixed populations and a mélange of formal developments juxtaposed with contested and informal urban spaces. And just like in many contemporary cities around the world, these road networks are spatially configured as a container of bundles of networked infrastructures. Road reserves in Nairobi contain power lines, optic fibre cables, water lines, storm drains, sewer lines and street lighting, albeit, in various states of operation or obscurity and with widely varying urban catchments. Second, their transformations have been accompanied by physical reorganization(s) of Nairobi’s metropolitan space, specifically, the compartmentation of informal spaces; those contested spaces on which a majority of city residents live and depend for livelihoods. As a road user before, during and after the said transformations—as a pedestrian, a motorist and a passenger on my various journeys in the Nairobi Metropolitan Region (see map 1.0)—I observed these physical reorganization(s).



Map 1.0 (left): A map of the Nairobi Metropolitan Region. (Source: Ministry of Nairobi Metropolitan Development, 2009)

They happened progressively during the pre-construction, construction and post-construction stages of projects such as the Thika Highway Improvement Project (2004-2012), the Kenya-Northern Corridor Transport Improvement Project along Mombasa Road from the City Centre to Athi River (2008-2012) and the Eastern, Northern and Southern Bypasses (ongoing) (see map 1.1). During this

time I lived in Kitengela and Athi River Townships, I was a partner at an architectural firm in Nairobi and I lectured at the School of Architecture and Building Sciences at the Jomo Kenyatta University of Agriculture and Technology. As my journeys traversed the Nairobi Metropolitan Region in this period this is what I observed:



Map 1.1: A map of Nairobi showing the planned transformations of major highways and the planned new bypasses. (Source: Ministry of Roads, September 2007)

1.1.1 *The pre-construction phase*

During the pre-construction phase, the physical transformations of road transportation networks comprised preparation of existing road space for highway construction works: this space was surveyed and demarcated. In the Kenya-Northern Corridor Transport Improvement Project along Mombasa Road, building owners were officially notified to demolish structures encroaching the demarcated 110 metres road reserve by 27th November, 2006. By 10th November 2006, some building owners had started demolishing those sections of their buildings that ate into the road reserve¹ (see plate 1.0). Starting September 12, 2008, the Ministry of Works indicated the distinct mark “X”, the letters “MOW” and the capitalised word “DEMOLISH” on the walls and on exterior surfaces of privately owned structures built within the proposed road space (see plate 1.1). Those structures were subsequently entirely removed or partially demolished. Along the Thika Highway, structures were marked similarly in September, 2008 then–

¹ This occurrence was reported in Kenyan newspapers; the Daily Nation and the Standard as well as news blogs of that day such as that at the website <http://allafrica.com/stories/200611100084.html> (accessed on 16th July, 2013).

under the watch of armed police—demolished by Ministry of Works bulldozers and excavators without prior notice to their owners² (See plate 1.2).



Plate 1.0: A commercial building partially encroaching the road reserve at Mlolongo along the Mombasa Highway in the process of being demolished by its owners on 6th November, 2006 to make way for highway expansion. (Source: Jamii Forums (accessed on 4th March, 2015)).



Plate 1.1: A mixed-use building encroaching the road reserve at Mlolongo along Mombasa Road on 13th January, 2007. The walls of such buildings were marked in emulsion paint by the Ministry of Works—as shown in the picture—and later demolished to make way for highway expansion. (Source: <https://egim.wordpress.com/2007/01/13/consequences-of-corruption-in-mlolongo/> (accessed on 10th March 2015)).

² Accounts of this vary but, according to building and business owners interviewed in the Kenyan press and whose structures were demolished along Thika Road, they were not given prior notice to vacate their property. As a result of these demolitions property estimated to be worth tens of millions of Kenya shillings was destroyed as reported in the Capital FM News on November 1, 2008. See a report of this at <http://www.network54.com/Forum/204096/thread/1312985786/The+Kshs-+27+billion+Thika+Road> (accessed on 10th March, 2015).



Plate 1.2: An armed policeman watches over a bulldozer and its operator during the forceful demolition of Visions Restaurant on Thika Road at Ruaraka above on 1st November, 2008 to make way for the transformation of the highway. (Source: Capital FM News)

1.1.2 *The construction phase*

At the construction phase I observed the grading of vehicular traffic diversions comprising all weather roads within the road reserves. These diversions were sometimes furnished with temporary signs for motor traffic to use during the period of the construction of the new highways. Provisions were not made to ameliorate disruptions of non-motorised modes of transport and of public transit occasioned by the construction of the new highways. No temporary bus stops, for instance, were erected. No footpaths were marked for either pedestrians or other non-motorized modes of transport to use to get along or across highway construction sites (see plate 1.3). Certain local roads connecting to the previous highway were closed off abruptly and with no provision for alternative connections. I observed the ensuing confusion³ and inconvenience. The natural terrain was radically altered through excavation, flattening and filling in with soils and crushed rock. New physical elements were constructed in the new road space: retaining walls, eight-lane highways, service roads, tunnels, entries, exits overpasses, underpasses and footbridges. Further to the severance of familiar and straightforward connections of the former highways with local areas, the configurations of the new highways imposed, instead, restrictive entries and exits that segregate traffic according to their destination, their expected speed of travel and their mode.

³ This abrupt severing of former local road connections was criticised by communities living along the Thika Highway in a report entitled *The Social/Community Component of the Analysis of the Thika Highway Improvement Project*, May 2012, prepared by the Centre for Sustainable Urban Development commissioned by the Kenya Alliance of Resident Associations (KARA).



Plate 1.3: Road construction going on at Thika Highway on 6th December, 2008. Diversions were prepared to cater for vehicular movement but other modes of transport were ignored. (Source: <http://www.jamiiforums.com/kenyan-news/231016-the-thika-super-highway-mega-project-21.html> (accessed on 9th March, 2015))

1.1.3 *The post-construction phase*

After practical completion of the new highways the reconfiguration(s) of road space continue to elicit a variety of contingent local reactions in the metropolitan region. This is manifested in the manner in which myriad activities have appropriated space on these highways. I observed three types of response to road infrastructure transformations:

- (1) Displacement and relocation occurs where activities and linkages were transformed by demolitions, ground modelling, rebuilding and/or new barrier erection. The positions of activities and their linkages are consequently moved to other locations.
- (2) Displacement, reinvasion and adaptation occurs where activities and linkages were transformed by demolitions, ground modelling, rebuilding and or barrier erection. The positions of activities and their linkages moved, but only for the period of construction. After construction the activities and their linkages moved back to their original positions but with adaptations to new configurations of the highway (See plate 1.4 and plate 1.5).
- (3) Partial displacement and adaptation occur where activities and linkages were transformed by partial demolitions alone. Only the positions of activities in demolition zones and their linkages moved. Adaptations to the new configurations of space

inscribed new interface relationships between buildings, networks and open spaces. Permanent structures were incrementally adapted to emergent interface relationships.



Plate 1.4: A scene of the underpass at Githurai Kimbo. This is an example of how displacement, reinvasion and adaptation by informal activities occur within road space along the Thika Highway. (Source: Author)



Plate 1.5: A scene of the bus stop and footbridge at Ruiru. This is an example of how displacement, reinvasion and adaptation by informal activities occur within road space along the Thika Superhighway. (Source: Author)

These adaptations to network transformations remain direct and observable response to the physical transformations of the road networks. But why do they matter? And why is their study important? They matter because everyday life at the street and building scale is a palpable indicator of the urban processes occurring in cities. Castells (1979: 379) argues that,

“What people perceive in everyday life, that is, *the urban process*, is produced through the interaction of elements of urban structure and the variations of urban politics.”

Congestion, animation, squalor, blight, sprawl, and poverty (or their converse) in cities confront us most profoundly at the street and building scales (Certeau, 1984, Dewar et al., 1977, Jacobs, 1961, Scott, 1998). That is why for instance Jane Jacob’s views on the changes occurring on the streets of Greenwich Village—rather than Corbusean panoptic contemplation of industrial cities from plan layouts at the metropolitan scale—still are, the foundation of seminal critiques of formal planning (Scott, 1998). Various urban studies show that urban qualities mutually reinforce each other at various scales (Anyamba, 2006, Dewar et al., 1977, Silva, 2012). Since the transformations of road transportation infrastructure traverses the Nairobi Metropolitan Region, the informal responses to these transformations and the changing everyday lives of road users can be considered as connoting the way in which the concurrent urban process is shifting at every scale from the street and building scale to the metropolitan scale. Their documentation and analysis hold the potential to improve the understanding of Nairobi’s ongoing urban process.

1.2 STUDY OBJECTIVES

This study has three objectives. The general objective is **(1) to understand how the transformations of road transportation infrastructure affect the diachronic urban process in Nairobi**. This general objective is bifurcated and guided by two specific objectives: **(2) to assess the context(s) in which road transportation infrastructure has been transformed in Nairobi**. To do this I, first, evaluate Nairobi’s road transportation infrastructure planning at the structural (metropolitan) scale and the architectural (street and building) scale and analyse how these contexts—transformed over historiographical time—express the tangible effects of planning in everyday life. I particularly explore how transformations of road transportation infrastructure cause physical and social changes and counterchanges. Second, I evaluate the process by which these projects have been realized. I discuss the political, technical and organisational milieux of road infrastructure transportation projects and what assumptions concerning urban form and urban functions are made in the transformation of roads. I evaluate these assumptions in light of the effects of the transformations at the

structural and architectural scales as well as their effects in everyday life. I conclude by **(3) identifying the implications of the ongoing road space transformations to Nairobi's urban process as a function of their effects and countereffects within lived experience.**

1.3 RESEARCH QUESTIONS

Due to the focus of my study on lived experience, I defined the research questions around spatial transformations and adaptations at the architectural scale and the implications of those transformations to the urban process. This argument proceeds from the concrete to the abstract (Lefebvre et al., 2013) because such a definition is likely to result into unique positions with regard to current transdisciplinary⁴ spatial debates for two reasons: (i) These debates are broadly predicated on the hypothesis that people affect roads. Discipline-bound studies in road transportation economics, civil engineering, urban geography and urban sociology are projected from the *a priori* epistemologically predictable position that roads affect people (Sheller and Urry, 2003). However, those types of studies have, so far, not motivated changes in techniques and tools for road infrastructure design; largely recommending restrictions on private car access into the city. More critically, they neither generate a transdisciplinary understanding of city space as a co-presence of location and liquidity (Doucet and Janssens, 2011, Sheller and Urry, 2003), nor in the context of the Global South, engage in controversy mapping as a reflection of what design does (Yaneva, 2011). (ii) This study considers the ongoing transformation and adaptation of road transportation infrastructure as dynamic long-term processes. As Teipelke (2014: 98) suggests,

“(...) a large infrastructure project is best understood as a process –and (with reference to the transformed highways) this process has not ended.”

I see this process rooted in multiple rhizomatic and loosely defined origins rather than as an iteration of stable and situated city history and city planning. This is because space is defined by the relation between objects, a relationship among things (and social relations) that constantly shift; a dynamic process rather than a predetermined map of fixed objects (and fixed social relations) in space (Harvey, 1996, Lefebvre, 1991b). Therefore, the study is not focused on the formulation of categories of space but on the

⁴ Doucets and Janssens (2011) argue that there is growing evidence and awareness that the earlier established and discipline-bound epistemology alone cannot effectively deal with the world's (spatial) complexity. As a consequence of this Rist (2011) says it is no longer possible to submit a research project without inserting it, at least formally, into an interdisciplinary framework. In this case I invoke transdisciplinarity because I consider the knowledge about the problem field to be uncertain, the concrete nature of the problem is disputed and there is a great deal at stake for those concerned by the problems addressed by the study and for those dealing with them (Pohl and Hardon, 2008).

presentation of possibilities for difference and multiplicities in the understanding of everyday space. With consideration to these two underpinning positions, the research questions reflect the progression of the current logic of argument—from concrete to abstract. My main focus is to document and analyse everyday spatial adaptations and to subjugate spatial transformation—as a product of political (socioeconomic) assumptions and design assumptions—to those quotidian adaptations. The overarching questions in relation to the core argument are: (1) What are the characteristics of the current spatial transformation(s) of road transportation infrastructure in Nairobi’s Metropolitan Region? (2) How have people responded to current spatial transformations of road transportation infrastructure in Nairobi’s Metropolitan Region? The auxiliary questions is: (3) What implications for Nairobi’s urban process do people’s everyday responses to the current transformations of road transportation infrastructure portend?

1.4 STUDY JUSTIFICATIONS AND SIGNIFICANCE

This study contributes to the ongoing intellectual shift in the manner of evaluating the informal cities of the Global South as products of lived experience (Lefebvre, 1991a) rather than as the exclusive product of the failures of conventional modern planning. In its analysis of lived experience at a city region scale it is a more comprehensive spatial analysis of the urban process compared to the inordinate focus of urban studies (in the Global South) on the constructs of informal urban settlement. By its deliberate focus on flux, movement and performativity, it is different from preceding studies in the way it develops its framework of spatial analysis. It is deliberately multidisciplinary, interdisciplinary and reflexive, exploring the plural relationship of the transformation of networks at a structural scale to the transformation of the urban process at the architectural scale.

The study straddles two spatial fields: **informal urbanism and mobilities**. Current studies of informal urbanism in cities of the South evaluate space as a static and synchronic phenomenon located within narrowly defined fields or professions. On the other hand regnant studies of mobilities take two paths: the first focuses on **mobility at a global scale**, a practice that, in its proclivity to be panoptic, tempers the nuances of local mobilities. The second in its technical focus, forecloses options for alternatives for lived space by taking a **deterministic view on planning**. It regresses, instead, to simplification based on calculated formulas, mathematical models and attempts at context-sensitive design⁵. It, considered collectively, is a test of predetermined

⁵ Edward Beukes (2011), for example, attempts to use demographic data to generate a predictive model to aid in the civil engineering design of roads in Cape Town that respond to expected user/modal demands. This approach, I argue, not only assumes the road is strictly to be used as specified in the highway code, it ignores the effects of the tactics of everyday life on

engineered calculations rather than attempts to understand the lived experiences of the city. The study ameliorates the deficiencies in both fields using a dialectic rather than prescriptive framework; an idea rooted in urban realities of the Global South. This dialectic framework is significant for the study of Nairobi for several reasons:

First, current unprecedented transformations of infrastructure networks are achieved with the aid of partial or full donor funding⁶. Such funding is sought using justifications premised on how the transformation of networks ought to improve the social and economic functioning of metropolitan regions⁷. Such premises are not rooted in fact; the fact of urban realities. The construction of such projects is done after “international” prequalification, tendering and bidding processes. Often foreign firms “win” bids based purely on technical and financial specifications.

Second, the last decade, marked by increased spending on infrastructure as per the Kenya Vision 2030 document, has seen the building of large infrastructure projects becoming prevalent in the Nairobi Metropolitan Region. As they affect urban activities—through erasure, disruption, displacement, reconfiguration or other types of change, they are transforming the urban form of Nairobi, and with it Nairobi’s urban process. Previous studies have shown that diverse informalities—ensconced in the multiple spatial transformations of urban activities over time—constitute a significant part of Nairobi’s urban process (Anyamba, 2006). The significance of this study, then, lies in its documentation and analysis, for the sake of planning and design, the effects (and counter-effects) of network transformations not only on urban form in the Global South in general, but also on urban processes in particular.

But why Nairobi? Why not elsewhere in Kenya? Transformation of road transportation infrastructure certainly affects Kenya’s citizens and visitors across social, cultural and economic strata. But because of the phenomenon of urban primacy, projects involving the physical transformation of infrastructure networks are prioritized and concentrated in the Nairobi Metropolitan Region (Obudho, 1992, Olima, 2001). The impacts of this concentration are most critical for the most vulnerable groups and communities: marginalised citizens of Nairobi are placed not just either at the greatest advantage or at

the highway because such effects can neither be grasped by engineering calculations nor understood by computer generated simulations.

⁶ The current highway improvement projects including the Thika Superhighway, the Mombasa Highway and the bypasses are all funded partially or fully by Kenya’s development partners including the African Development Bank, The World Bank and the China Development Bank.

⁷ Feasibility reports such as the AfDB Nairobi-Thika Highway Improvement Project Appraisal Report contain assumptions about constructing the new highway. For example, that expanding the highway will lead to a more efficient flow of road traffic. This specific assumption is replicated in other appraisal reports prepared for road construction projects in Nairobi from 2006 on.

the greatest disadvantage of new modes of, speeds of, and accessibility to mobility but are also exposed to the inadvertent disruptions of services and the adverse environmental effects of infrastructure transformations. This is why the study—deliberately rooted in everyday life—is important at this time of fundamental transformation.

1.5 ORGANISATION OF THE MONOGRAPH

The study is organised into seven chapters:

Chapter one is an introduction to the study. It adumbrates the study problem and its significance, states objectives for the intended investigations and suggests the process to be applied in achieving the set objectives. **Chapter two** is a discussion of the research approaches to be used in guiding the study and a description of the research gap the study attempts to fill. It describes the type of data considered relevant for the study and how it will be collected and analysed. **Chapter three** identifies, critiques and synthesises prevailing discourses of road transportation infrastructure in the Global South within the diverse fields of transportation planning, economics, civil engineering, landscape urbanism, politics and government, spatial justice, informal urbanism, mobilities theory and everyday life. It concludes by defining a conceptual framework for existing debate.

Chapter four is an analysis of Nairobi's structural context and how its transformations of highway infrastructure enframe urban space. **Chapter five** is a documentation and discussion of five selected case studies in Nairobi. It describes the particular architectural context and the lived experiences of highway users including their reframing of road space for their own needs and to their own ends. It then summarises the observations made in each of these case studies. **Chapter six** is a discussion of the empirical findings and observations made during fieldwork and how these findings meet the objectives of the study. The discussion refines the theoretical perspectives through the formulation of an analytical framework. It establishes the position of the research relative to the urban realities of Nairobi and how, with consideration to the study findings the ongoing road infrastructure transformations can be comprehended.

Chapter seven contains reflections on the study. It specifically identifies and explains what new knowledge the study reveals. It then conflates what has been learnt from the empirical findings with recommendations on new perspectives and new directions in research on road transportation infrastructure in the Global South.

Chapter 2

2 RESEARCH APPROACHES

2.1 OUTLINE

This chapter describes the research approaches used to respond to the stated research questions. It is an account of the conduct of empirical investigations of **how people affect roads**. In the study these relations are those of cause and effect: that is—people and their activities affect both the physical configurations and the everyday ways in which highways are used. A review of literature of road transportation infrastructure provides the background and the theoretical perspectives through which the claims of transportation planning, mobilities studies and road infrastructure economics (that roads affect people) can be challenged. In addition the empirical investigations that countervail top-down arguments that privilege road transportation infrastructure as cause (that highways cause social change) require the determination of consonant approaches and, with regard to these approaches, systematic methods of investigation. Accordingly, I explain my approaches and the decisions behind empirical methods, and elaborate the processes of my field studies.

2.2 APPROACHES

My interest in this research study began with my observations of the transformations of highways in the Nairobi Metropolitan Region and the subsequent evolution of the activities along them. I sought to know what effect people had on road infrastructure as highways appeared to accommodate activities that they were not designed for. I considered the effects of people on highways in three ways:

First, these highways are conceptualized, justified, planned, **designed and transformed by people over time**. They are not an abrupt transfiguration of space devoid of social, political, cultural and economic influences. On this basis, I argue that persons and processes involved in the conceptualisation, justification, planning and design of the new highways and the ways in which these new highways are constructed both reflect and exert power. This power, more specifically, is the power to determine how infrastructure is regarded, what infrastructure gets built, how it is built, who builds it, who uses it, when it is used and how it is used. In other words it is a reflection of the organisation of society and how this organisation is spatialised.

Second, everyday individuals and communities perform activities on the highway, by the highway, under the highway and sometimes even above the highway. The highway may be designed for some of these activities but, others, in my observation, seem to be opportunistic, to prey on the highways or to be **generated by shifting social and environmental situations**. Boarding *matatus* (local transit buses), crossing the highway, hawking fruits and vegetables along the pedestrian path, milling around

accident scenes, protesting vociferously—and sometimes violently, seeking change to give to a bus passenger, pulling carts in the path of vehicular traffic and even pilfering damaged crash barriers are some of these daily scenarios played out on the highway. This adds a layer of performativity onto the technical layer imposed by planning and design processes and the physical layer of the material structure of the highway and the specificities of urban geography. The social range of this performative layer spans from a sort of visceral adaptation of space to suit immediate spontaneous sensual needs to the devices for tapping into the opportunities that communities believe they see on the highway to itinerant existences rooted in tribal traditions going back to pre-colonial times. This imbrication is, in fact, a quotidian negotiation between those with official power (though often removed from the scene) versus those who occupy the actual space and have some power to negotiate their legitimate needs in space even if just for fleeting moments.

These origins, and the fact that the phenomenon of the location of informal activities along highways unfolds outside a setting in my control, then gave my study a distinct proclivity towards a **case studies** approach. Case studies investigate the phenomenon of the invasion of highways by informal activities “*within a real life context*” (Hall, 2008, Yin, 2003). I used multiple sources of evidence—observation, surveys, and archival information—to carry out an investigation into the phenomenon. This sourcing of data from multiple sources is important in overcoming some of the challenges of obtaining data in Kenya. In my experience carrying out the research I found out that it is difficult to obtain information from government departments. This stance is echoed by the writings of other researchers who have undertaken studies in road transportation infrastructure in Nairobi namely, Becker (2011) and Teipelke (2014). Some sources of secondary information are contradictory (Anyamba, 2006). In other cases data does not exist, and if it exists it is incomplete, out of date, insufficiently detailed, unreliable, forged or based on unclear assumptions (Ayogu, 2007, Rakodi, 1997, Teipelke, 2014). By using the multiple sources of data (see figure 2.0) embedded in the case study method, it becomes possible to institute between-method triangulation to pre-empt biased findings (Hall, 2008).

I, then, approach my empirical investigation in two ways: road transportation infrastructure in a city is not constructed in a social vacuum. Considering that the city is an environment in which social relations are forged (Lefebvre, 2005), I investigate the road structure of the city of Nairobi and its metropolitan region and how the social relations it has supported—and still supports—are spatially produced. My method comprises a discussion of the underlying structure of Nairobi through a **study of historiographical material**—satellite maps, journals, newspaper articles, academic papers, theses, government documents, scholarly books, magazines, events recorded in individual and company libraries and the Kenya National Archives. From them I derive

the record of the road transportation infrastructure network as it was planned, implemented, and delayed or neglected from the inception of the city.

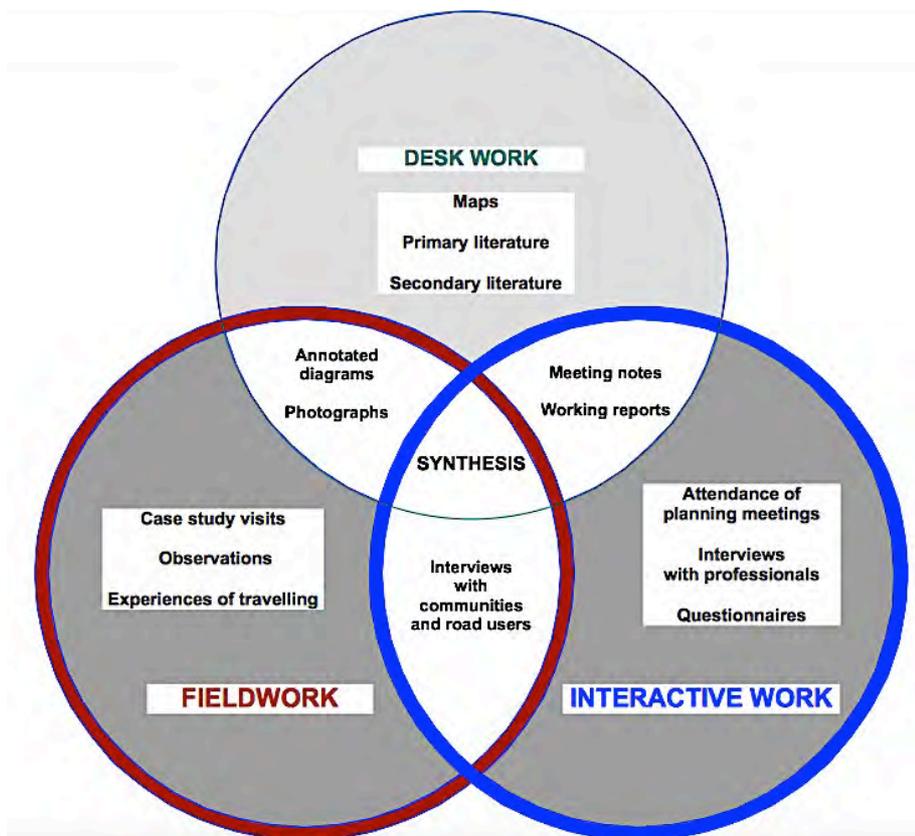


Figure 2.0: A diagram showing the use of multiple sources of data to pre-empt bias. (Adapted from Teipelke (2014))⁸

I particularly focused on extracting data about how the social, political and economic ambitions of various elite have been expressed and inscribed over time by highways. In this case I see people—that is politicians, planners and engineers, as cause: as inscribing their official power, worldviews, limitations and ideals through the design, configuration and distribution of highways in space.

I, subsequently, address Nairobi's current transformations. I evaluate the road transportation infrastructure projects against their justifications by politicians, economists, civil engineers and transportation planners. Through perusing existing literature about roads in the Nairobi Metropolitan Region, I evaluate claims that roads

⁸ This diagram is adapted for the study from Teipelke's (2014) conceptual model for investigating the THIP.

are responsible for (positive) social transformations and critique the kinds of urban environments road infrastructure has created. Then, at the metropolitan level, I use project maps, project details, current proposals and the spatial qualities of the new highway structure to reconcile current transformations of the road network with the structure of the city region as an ongoing political project. I conducted a survey through a questionnaire that an engineer at Kenya National Highways Authority requested during my first visit and offered to fill in. In the questionnaire I asked questions about the engineer's own opinions about involvement in transportation projects, how they work with foreign experts and contractors (since the new highways are planned and designed by foreign firms) and how they influence the prioritisation of road transportation infrastructure projects. I also use an analysis of existing literature to evaluate the environment the new road transportation infrastructure networks have created and the social transformations they have caused against their political and technical justifications.

Third, and **most importantly**, I consider that **cities are shaped by the everyday lives of common people**. That is to say the social relationships among communities and individuals—who are often not official agencies of planning, are actively expressed in the space of the city. The premise I make here is that though a majority of the electorate vote into power the political elite, political opinions among the electorate are divergent and poorer citizens are often disenfranchised. Divergent views and political disenfranchisement show themselves physically in alternative visions of space and alternative ways of negotiating space. I take this as the basis of the existence of informal activities on highways and why **people affect highways**. So I chose cases that represent different transformations of the road transportation infrastructure at a local (architectural) level. I selected three highways that, are representative of the new transformations:

- (1) the **Thika Superhighway**—a six-lane expressway with overpasses, underpasses, tunnels, barriers flanked on both sides by two-lane service roads and transcending the north of the Nairobi Metropolitan Region,
- (2) the **Mombasa Highway**—an expanded dual carriageway with four lanes and flanking service roads on both sides in some sections transcending the south of the Nairobi Metropolitan Region, and,
- (3) the **Eastern Bypass**—a new two-way, two lane single carriageway passing east through a formerly peripheral area of the Nairobi Metropolitan Region.

I classified the transformation of these highways as radical transformations, intermediate transformations and minimal transformations. This classification was based on four criteria: (i) numbers and configurations of new physical elements introduced in road space, (ii) degree of alteration of existing landforms for purposes of road transformations, (iii) degree of restriction of access into local areas, (iv) changes in types and intensities of informal activities after transformations, and, (iv) ensuing conflicts between various modes of road transportation or the complete exclusion of certain modes of transport existing prior to the transformations.

2.3 RESEARCH METHODS

I locate this study in debates about what design does: the wider questions the study deals with are—what effects do design trigger? How does design provoke (visible) disagreement and reaction? My study deals with the unfolding effects of actors and acts in a situation of uncertainty; their shifting positions and the implications of the ensuing conflicts. The intention of the study is to raise awareness about the consequences of design practice rather than to prescribe how to design per se. It is a “*plunge into the design world outside to face its complex ontology*” (Yaneva, 2011).

The perspective I present is, essentially, the mapping of controversies surrounding new large road transportation projects in the Nairobi Metropolitan Region. Therefore, I employ a **multi-method approach** to the study because of the diversity of data that I require to meet the three objectives I set for the study. Because of the transdisciplinarity of the research area, I do not foreclose any category of approaches that would, at initial evaluation, seem peripheral to those of my own professional and its intellectual, or cognate, background(s). I selected methods reliable for gathering and analysing the diverse data I require for my study rather than make my study fit into the restrictive mould of existing (disciplinary) methods (Pink, 2001).

First, I used a **case study method** because the location from which evidence is adduced is specific: my research is about the transformed highways located in Nairobi’s Metropolitan Region. This is where I carried out a pilot study. I observed developments in neighbourhoods along two expanded highways: the Thika Superhighway and the Mombasa Highway, and one new bypass—the Eastern Bypass. At this phase I formulated tentative criteria for evaluating both the physical urban transformation I observed and peoples adaptations to these transformations. I focused on cases I categorised to be transformed in characteristic ways that I described in detail (see chapter 2).

Second, based on an understanding of the effects of different actors on the highway and with knowledge of the **scales of urbanism** I determined that the transformations of road transportation infrastructure could be analysed comparatively. So I compared **the structural context** (the characteristics of the structure of highways at the metropolitan scale) to **the architectural context** (activity and the organisation of space at specific sites within the Nairobi Metropolitan Region). I, simultaneously, compared the views, methods and opinions of different actors in affecting highways: I carried out structured **surveys** with engineers at the Kenya National Highways Authority to collect information about the planning, design and implementation of the design of the transformed highways. I augmented these interviews with existing maps, by **literature** on Nairobi's historic road planning and scholarly discourses on Nairobi's urban process. I did further analysis by reading satellite maps outlining the configuration and physical elements of the new road infrastructure projects in use. Because of the limitations of maps in expressing lived experience I employed **mapping as a method of visualising** current trends and for analysing the historical development of the city rather than, as used conventionally, a prescriptive method or a generative method. I then compared this structural context with the architectural context of the study. The architectural context, for purposes of my analysis, comprises activities and the organisation of space abutting the transformed highways in selected case study areas. I observed and documented activities along and in the transformed highways in these areas. I then carried out **interviews** with members of local communities, street people, workers and business owners. I used a multi-method approach both to collect data and to compare diverse contexts as well as people's effects on highways.

Third, I experienced the highways and made **observations**. I walked along the highway in the selected areas to see the transformations and the activities along them first-hand. I drove along the transformed roads and embarked on journeys on buses and *matatus* to and from the selected sites and townships. During my journeys on *matatus*, I interviewed other road users—pedestrians, motorists, cyclists, public transit passengers and hawkers—to record their views and their **empirical experiences** of the highways

Fourth, I was inspired by Lefebvre's Rhythmanalysis to observe and analyse the everyday life experiences of communities and road users along transformed highways. Rhythmanalysis identifies the relationship between activities and the times they occur in a manner that represents the plurality of everyday experience (Lefebvre et al., 2013). I observed the selected case studies over 60 days to establish **patterns and cycles of events**.

Fifth, I recorded some survey information in the form of space-time diaries to know the quotidian movements of individuals involved in activities around the highways and how their activities are distributed in space over time. This facilitated the analysis of

everyday mobility and everyday activity as a factor of specific road network transformations (Janelle et al., 1988, Schade and Schlag, 2003). I borrowed the specific procedure from Lefebvre's Rhythmanalysis. The procedure clearly identifies spatial patterns associated with **activities and their occurrence in time**. Figure 2.1 is a diagrammatic summary of the thought process and the evolution of research methods employed in the study.

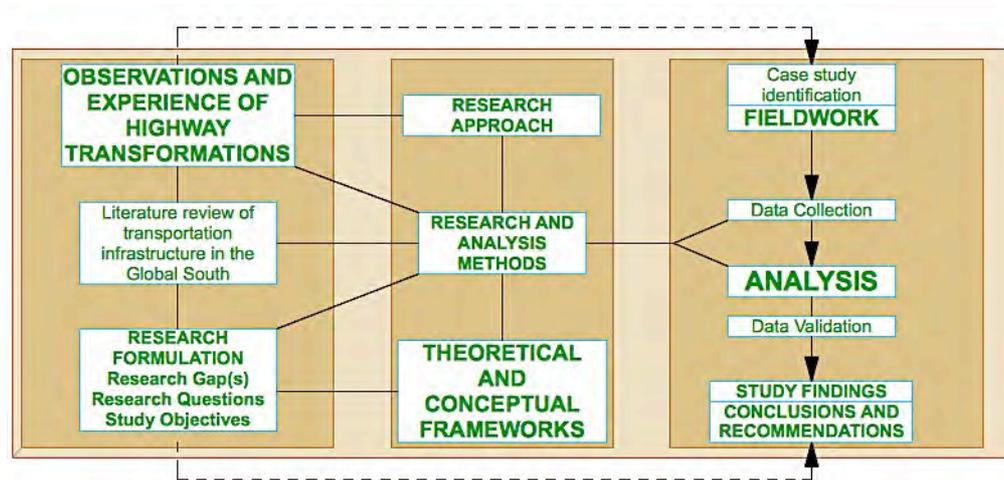


Figure 2.1: A graphical overview of research approaches for this study (Source: Author)

2.4 SOURCES OF STUDY DATA

Data required for the study was collected from diverse sources because of the multidisciplinary and interdisciplinary framework necessary for the synthesis of the factors affecting the transformation of road transportation infrastructure. This framework is made up of three components: (1) the structural and architectural contexts for transformation, (2) physical and social transformations with a focus on lived experience, and, (3) emergent urban process(es).

I am frequent user of the transformed highways, having to travel at least four days a week to work, before and since their transformation. In the course of my studies and work duties over 10 years beginning in the year 2000, I used the highways that existed before the transformation; I began using the new highways—that had not been built prior to 2010—after their completion. I had an accident late one evening in 2010 on the Thika Superhighway during its construction. In the final two years of my field studies, my family lived in a house next to the transformed Mombasa Highway. I made observations on my quotidian experiences and travels along the transformed highways—of physical

transformations in road space and the adaptations of activities to the transformations—from 2006. I recorded these observations in photographs and in my own annotated sketches and drawings. I collected data from formal documents and maps from the archives of the Kenya National Highways Authority (KenHA), Surveys of Kenya, Google Earth, the World Bank, the African Development Bank and the Government of the Republic of Kenya. I conducted interviews with key informants and various road users: pedestrians, motorists, cyclists, nomadic pastoralists, rollerblading trainers, residents of communities adjacent to highways, *matatu* and bus passengers and conductors. I also conducted interviews with the civil engineers at the Department of Design and Construction of the Kenya National Highways Authority.

2.5 SELECTION OF CASE STUDIES

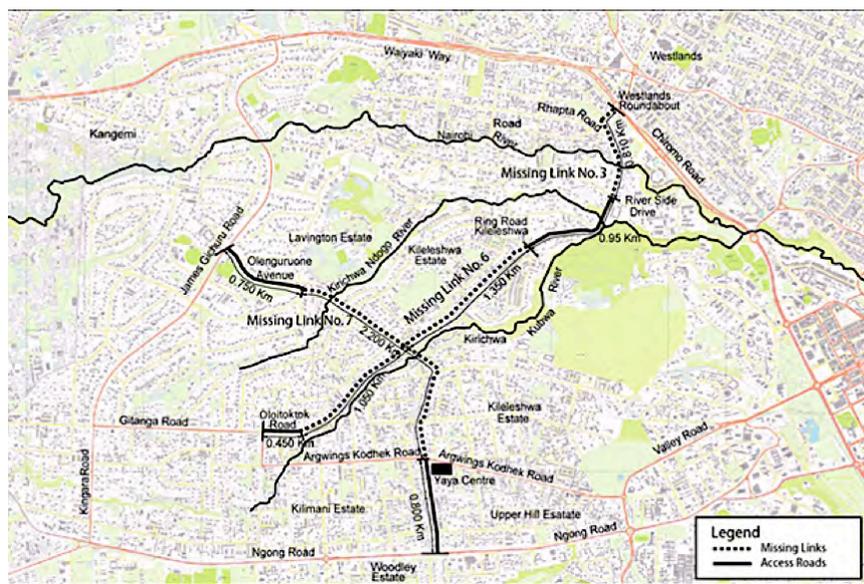
I selected case studies as representative of different transformations along highways: locations are chosen because they show varying degrees of adaptation to road space from relatively minimal to extremely radical transformations. They are also relatively diverse in terms of the activities (simultaneously informal and formal) they contain: residential, industrial, institutional, commercial and speculative. These locations are at the boundaries between the centrally located districts of Nairobi and the larger metropolitan region. Due to their positions in the Nairobi Metropolitan Region, they visually or physically exhibit the political and social tensions that facilitate a plethora of adaptations that are more heterogeneous than that present anywhere else at the road transportation infrastructure projects. I also selected a limited number of locations outside my case studies as exceptions where aberrant adaptations have developed different to those in my case studies. Along the transformed highways I identified stretches with observable concentrations of informal activities and complex—sometimes conflicting, mixes of land use. Along the Thika Superhighway I selected the stretch from the Githurai 45 roundabout to the Roysambu roundabout, and along the Mombasa Highway I similarly selected the stretch from the City Cabanas junction to the Outer Ring overpass at Embakasi as cases of radical transformation. Along the Mombasa Highway, I chose Mlolongo, a linear township, and Athi-River/Kitengela, bordering townships shaped by a major road intersection as the examples of intermediate transformation. Along the Eastern Bypass, I chose Utawala, a linear township at a new single carriageway road as an example of minimal transformation. This selection is summarised in table 2.0.

Table 2.0: Selection criteria for case studies. (Source: Author)

CLASSIFICATION	CHARACTERISTICS	CASE	DESCRIPTION
Radical transformation	Highway widening	(1) Githurai; Thika Superhighway	Market town.
	Dual carriageway		
	Radical landscape alteration	(2) Embakasi; Mombasa Highway and Eastern Bypass	Industrial and residential zone
	Overpasses		
	Barriers		
	Restricted access		
	New elements		
	High intensity activity		
High intermodal conflicts			
Intermediate transformation	Highway widening	(1) Mlolongo; Mombasa Highway	Trucking and industrial township.
	Dual carriageway		
	New elements	(2) Athi River-Kitengela; Mombasa Highway and Nairobi-Namanga Highway.	Wildlife park townships, industrial zones, and, emerging residential townships.
	Moderate intensity activity		
	Intermodal conflicts		
Minimal transformation	New road	Utawala; Eastern Bypass	Government institution township, and, new residential township.
	Landscape alterations		
	Overpass		
	Incremental activity		
	Intermodal conflicts		

During the period of study, there were other recently completed roads projects such as those referred to as "missing links" (specifically Nairobi Western Ring Roads) (see map 2.0) as well as the ongoing road projects in the Nairobi Metropolitan Region such as the Southern Bypass. So why were missing links and the Southern Bypass not included in the case studies considered for this study? The answer lies in the legal intrigues besetting their implementation and the degree of their transformations.

During the period of the study the Southern Bypass was mired in environmental advocacy and legal hurdles. As at September 2015 it is yet to be completed. Therefore, the potential of its consequences on everyday life during the study, at best, could only be speculated upon. On the other hand the 13.6 kilometres of missing links were not investigated because they are either, (i) located in areas of the city (Kilimani, Westlands, Lavington) that, according to various reputable archival sources, have through Nairobi's history been planned with consideration needs of the bourgeois rather than with reference to the growth of the city into its metropolitan region and beyond, or, (ii) they do not imbue Nairobi's urban space with new configurations and/or physical elements where adaptations can clearly be seen. The case studies selected for the study, conversely, were located along highways regarded as the megaprojects of the city: they were unprecedented in scale and introduced new spatial configurations and physical elements in the city.



Map 2.0: A map showing Nairobi's missing links. (Source: Ministry of Roads)

Since my research revolves around three primary questions, my methods match the information I need in order to answer them. The first question was about the

characteristics of the physical and social transformations of highways in Nairobi. I recorded these transformations through **photographs** and **satellite maps** of the changes to road transportation infrastructure in Nairobi since 2003. The second question was about how people responded to transformations of the highway. I made **observations** of the location, patterns and rhythms of activities in highways. I made **sketches** and took photographs of these activities. I also conducted **surveys** to find out why people located their activities in the space of the highways, how they organised themselves and how they believed they made the space of the highway work for them (see sample questionnaire in Appendix C). The third question was about the implications of road infrastructure transformation to Nairobi's urban process. I use a literature review to describe the process then use **argumentation** based on the findings from the case studies to show how the study of people's adaptations to the highway transformations contributes to the theories of the urbanism of the informal city.

Since transformed highways were designed for the movement of vehicles, pedestrians, and even domestic animals, I wanted to find out how the highways affected these modes of movement too. Movement is an important and inescapable part of everyday life. I wanted to know how people's everyday lives were transforming the highway or being transformed by the highway. I also wanted to make observations about transformations as experienced through journeys made through various modes of road transportation on the highway. So I walked along the highway, drove extensively along them, experienced journeys as a passenger on buses and *matatus* and documented my experiences in a diary. In the course of my studies of activities along the highway, I found out that although certain locations had the same physical elements, for instance footbridges, the intensity of activities and the types of people that located there were less varied and more distinct. I sought out the reasons behind these exceptions and differences. Referring back to the argument that the highway is both a reflection and, simultaneously, an exertion of power, I sought to know more about the spatial organisation along the highway. I raised questions about how these spaces were used, when the spaces were used, and what kinds of people were involved in different activities. In order to further find out why activities differed at some locations—displaying similarities in infrastructural elements but differences in their use—I carried out a survey based on an adaptation of space-time diaries. According to Janelle et al., (1988) and Pendyala (2003) space-time diaries provide a basis for the detailed description and analysis of individual travel behaviour. Since they record the locations of individuals throughout the day, it is possible to use them for the timing, sequence, duration and frequency of activities and journeys (Janelle et al., 1988). In my study I asked respondents to recount to me the locations and events of their day. I carried out this study for a period of five days—three weekdays and during the weekend. I recorded this information in the form of space-time diaries. I recorded the demographic

characteristics of the people at the different locations according to gender, age and occupation since this would give an indication of the type of people involved in activities. I expressed these in the form of graphs that, I opine, are more vivid for purposes of visual communication. I did not disaggregate the population into sub-populations and role groups with respect to the demographic characteristics or do a more detailed analysis for each of these role groups. This is because I limited the scope of my study with reference to two factors: the inclusivity (demographic characteristics) and accessibility (geographical range) of the infrastructure (footbridges) in the selected locations. I selected footbridges in Githurai; at Roysambu and at Mwiki, as well as at KIE as the sites on which to carry out my space-time diaries study. These sites had similar footbridge designs but very different intensities of activities around them. At each location I recorded the daily travel patterns for a minimum of 30 respondents selected by random sampling so as to facilitate scientifically valid calculations (David and Sutton, 2004, Ott and Longnecker, 2010). I calculated the means and standard deviations of the geographical range that would help to comparatively analyse the mobility of people in the case studies and also establish the kinds of patterns accompanying the use of highway elements. In cases where the standard deviations were relatively higher, I judged that the geographical range was varied and more complex. Conversely, in cases where the standard deviations were relatively lower, I interpreted the geographical range to be less diverse and proportionally simpler. I explained these variations by comparing the land use, activities and circulation patterns adjacent to highway elements.

By adapting the space-time method, I recorded and analysed information about who comes to these locations, what they do, how their activities and activity patterns vary through days and how accessibility and inclusivity differ in these places. I used these analyses combined with the influence of Lefebvre's Rhythmanalysis to strengthen my discussions on the patterns of the everyday use of the highway. My analyses align to the logic of Lefebvre (2013: 73-73) 73-74 who argues that,

“(...) the everyday is simultaneously the site of, the theatre for, and what is at stake in a conflict between great indestructible rhythms and the processes imposed by the socio-economic organization of production, consumption, circulation and habitat. The analysis of everyday life shows how and why social time is itself a social product. Like all products, like space, time divides itself and splits into use and use value on the one hand, and exchange and exchange value on the other. On the one hand it is sold and on the other it is lived” (Lefebvre et al., 2013: 73-74).

Lefebvre (2013) suggests two ways to measure everyday time: one, by the use of time devices, like clocks, that impose repetition and two, by the use of cycles and rhythms that cut through the monotonous repetitions imposed by time devices. Accordingly, “*there is no time to do everything, but every doing has its time*” (Lefebvre et al., 2013:

74). So I recorded activities and their cycles, interruptions to activities and the chronological times at which these events occurred at the case studies. The times at which interviews were conducted were also recorded so that it could be possible to deduce how people's perceptions about the highway and the activities along the highway changed over the day. The methods of study and their objects are summarised in figure 2.2:

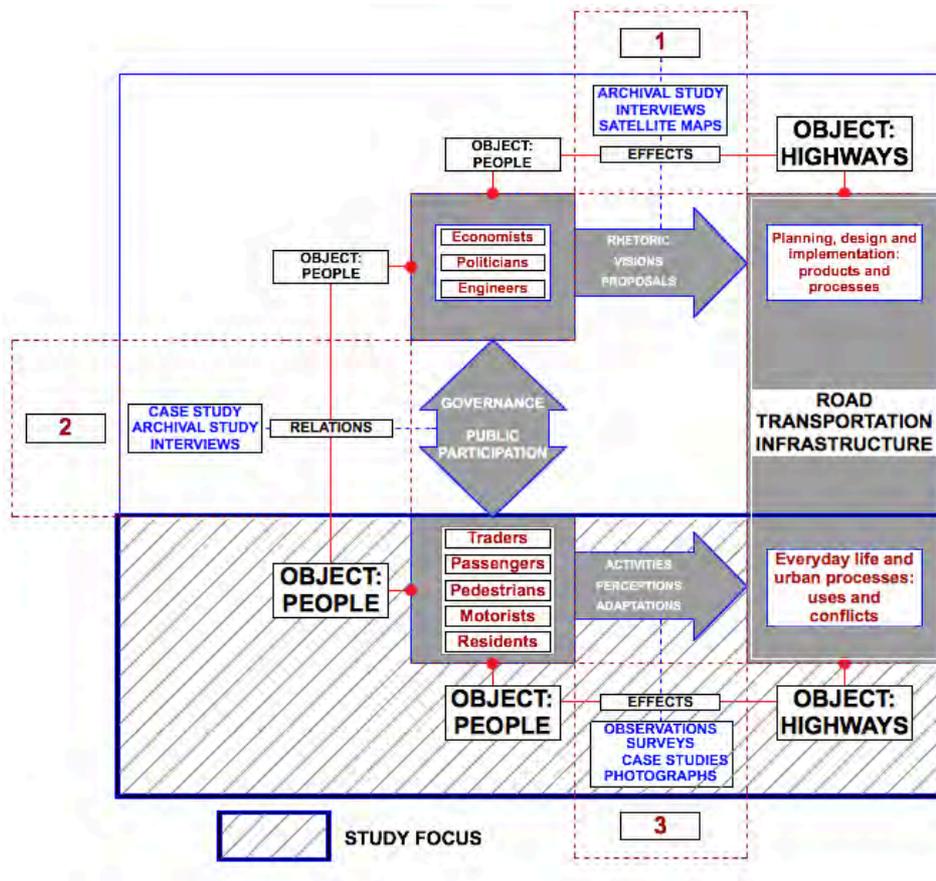


Figure 2.2: Methods and their objects of study. Relations between different actors and road transportation infrastructure (1, 2 and 3) are studied with methods that elucidate their perspectives, their inputs, their effects or their interactions. More weight is accorded to everyday life as indicated by the study focus. (Source: Author)

2.6 METHODOLOGICAL ISSUES

During the course of my field study Kenya got involved in a "war against terror" in Somalia. It became increasingly risky to take photographs and make sketches by the roadside as the Kenya Police Anti-Terror Unit were suspicious of any activity suggestive of imminent attacks on road transportation infrastructure among other terrorist targets. In fact there had been some bombings of buses on the Thika Superhighway in 2014. On 18th February, 2015 I was summoned by the anti-terror police unit and interrogated about my activities after taking photographs and sketching footbridges along Thika Superhighway even when I already had written authorisation from the Kenya National Council for Science Technology and Innovation to carry out my study.

It was difficult to get information from engineers working at the Kenya National Highways Authority as they were reluctant to let what they considered "government secrets" out of their custody. I therefore had to supplement the information they provided me with public documents I obtained from more transparent organisations involved in the highway transformation projects.

Ideally, it would have been more inclusive for the study to show the transformations in time from before the transformations to after the transformations. However, the study began after transformations were carried out. In fact it was the roadside communities' adaptations to the transformed infrastructure that got me interested in the study in the first place. And so it was not possible to record the state of all the road transportation infrastructure before the transformations and to systematically catalogue the transformations.

Also the study into everyday life required methods of recording data that capture real-time occurrences. The ideal choice would have been recordings, both audio and visual, of occurrences. However, these recordings would require substantive expenditure and would not be admissible in a thesis. So instead I used satellite maps and photographs as well as recorded interviews as the alternatives for other audio-visual data collection instruments.

Chapter 3

3 PERSPECTIVES AND FRAMEWORKS

3.1 OUTLINE

Various theoretical and practical perspectives concerning large road transportation infrastructure projects in the Global South have emerged from the fields of geography, economics, urban planning, landscape urbanism, engineering, and urban design. These fields are, typically, at the fore in setting off requisite processes for transportation infrastructure and claim to possess the quintessential expertise appropriate for justifying, conceptualising and achieving road transportation infrastructure as product in context. I build my theoretical framework in three ways: first, by considering the merit of arguments in major debates in those discourses, second by grounding arguments into context in two ways; the context of ongoing debates in the Global South in general and, the context of the peculiarities of the city of Nairobi in specific, and, third, by identifying gaps in the prevailing theoretical perspectives of regional highway infrastructure projects in the Global South. This adumbration of my theoretical argument does not imply a resort to linear argumentation in assessing and critiquing these perspectives. My analytical thread can be said to be rhizomatic: many of the themes I address recur across transdisciplinary debates and, concurrently, across intradisciplinary schools of thought. And, since my interest in carrying out this study was piqued by taking notice of physical transformations in transformed road space, I use my analysis to express the conceptual framework as predominantly spatial in the subsequent section.

In this section, I identify the predominant theoretical perspectives in the road infrastructure debates of the Global South and describe the relationship between these perspectives. I then identify gaps and raise questions about these theoretical perspectives with reference to my own experience and knowledge of the reframing of transformed highways in Nairobi and systematically posit these questions as suggestive of alternative frameworks to the existing perspectives on infrastructure. Finally, I situate my reframed theoretical perspective within existing debates.

First, I discuss perspectives of highway infrastructure with reference to the current nature of **transportation planning** in Nairobi and how highways as city infrastructure function within transportation corridors. Next, I discuss how **road infrastructure economics** influence the prevailing view of highways as the cause of economic and social transformation. I discuss how highway infrastructure is ideologically linked to **urban form** in the historical planning of Nairobi both as a reflection and an affect of the social division of labour and the social division of space. I then ask questions concerning how local communities and areas were integrated into infrastructure design by a consideration for **context-sensitive design**. I discuss the implications of the

trenchant critiques **landscape urbanism** offers to the types of large transportation corridor projects built in the Global South as justified by the fields of civil engineering and economics. I consider how **politics and governance** of the city region and the nation state have resulted into the configuration of the highway as it is and how as a result of this, contestation is displayed on highways. I discuss how ongoing debates on **spatial justice**, both as distributive justice and as the emphasis of social group differences, question the emphasis on automobiles and the building of highways to the detriment of non-motorised movement, social equity and the aesthetic qualities of urban space. I evaluate arguments on automobility both from the perspective of **mobilities theory** that glorify the car as the quintessential of democracy and emancipation for marginalised social groups and from the perspective of the urban realities of the Global South. Finally, I discuss how conceptions of **everyday life** help in describing the transformations and effects of the new highways more than any other consideration.

3.2 TRANSPORTATION PLANNING IN NAIROBI

In the City County of Nairobi, planning in general is fragmented. Urban planning and transportation planning are distinctly separate with functionally compartmentalised institutions responsible for the planning, design, implementation and management of different types of roads. Even within transport planning, the working of departments is uncoordinated (Wasike, 2001). First, fragmentation originates in the way the roads are classified in Kenya. The Kenya draft policy on aligning the roads sub-sector with the constitution (Republic of Kenya - Ministry of Roads, 2012: 2) states that,

“Under the Constitution, functions, powers and resources are divided between the National and County Governments. The Constitution recognises two categories of roads: national trunk roads and county roads. The functions of the National and County Governments are set out in the Fourth Schedule of the Constitution. For the National Government, these are: road traffic, the Construction and operation of national trunk roads, standards for the construction and maintenance of other roads by counties, capacity building and technical assistance to the counties, public investments and disaster management. On the other hand, those of the County Government are county transport including county roads, street lighting, traffic and parking, public road transport and ferries and harbours.”

This statement describes the way in which responsibilities are highly bifurcated to avoid overlapping responsibilities between the national and county governments. This is done in the belief that clarity of roles prevents inter-governmental or intra-ministerial conflicts and “improves service delivery.” In fact this *modus operandi* is applied with such blind faith that there is no connection between the structure of the state corporations under the Ministry of Transport and Infrastructure, for example, and the

structure of the City Planning Department of the County Government of Nairobi⁹. No official document exists that suggests how they are supposed to work together to resolve transportation planning or urban planning problems in the Nairobi County or the Nairobi Metropolitan Region. Interestingly, this bifurcation of planning scopes and responsibilities is directly counterintuitive to solving the problems identified as currently ailing the transport sector. The Kenya draft policy on aligning the roads sub-sector with the constitution (Republic of Kenya - Ministry of Roads, 2012: 4) contends that:

“(...) The challenges inhibiting the transport sector from performing its facilitative role in respect of national and regional economies include; **lack of [a] fully integrated transport system**, lack of a transport policy, institutional deficiencies, inadequate human resource capacity and low capacity of local contractors (...)”

The draft (2012: 5) goes on to further state, as a solution to these problems, that:

“Currently the Ministry of Transport as set out in the Presidential Circular No. 1 of 2008 is in charge of Transport Policy, Kenya Railways Corporation, Kenya Railways Training School, Kenya Ports Authority (...), Kenya Airports Authority (...), Kenya Ferry Services, Kenya National Shipping Line, National Road Safety Council, Transport Licensing Board, Registration and Insurance of Motor Vehicles, Motor Vehicle Inspection Unit, Kenya Civil Aviation Authority (...), East African School of Aviation, Kenya Maritime Authority, Bandari College and [the] development and maintenance of airstrips. From the **above there is need to bring together those scattered road related functions to one actor for cohesive harmonisation, co-ordinated planning and management** (...) for effective delivery of services to Kenyans.”

Diametrically opposite to the ethos of these statements, the Ministry of Transport and Infrastructure, as currently constituted, enlists more state corporations—18 in total (three more than existed in the previous Ministry of Roads), each with a distinct sphere of operation and a discrete mandate (see table 3.0). This is not profoundly shocking, given the way governments have been formed since the 2002 political maturation of the Kenya into a democracy; coalitions. Clearly, in the negotiations that define coalition building public policy is often sacrificed for the sake at the table of political expediency.

⁹ NIUPLAN 2013 describes the proposed new structure of the new Nairobi City Planning Department under the first County Government of Nairobi. It omits provisions for integrating the work of the City Planning Department with the State Corporations undertaking planning within the Ministry of Transport and Infrastructure.

Table 3.0: The institutional arrangement for urban transport in Kenya in 2012. Source (Project appraisal document on a proposed credit in the amount of SDR 193.5 million (US\$300 million equivalent) to the Republic of Kenya for a National Urban Transport Improvement Project. July 9, 2010).

NO.	ORGANISATION	RESPONSIBILITY
1	Ministry of Transport	Formulation of the national transport policy and transport sector administration.
2	Ministry of Roads	Formulation of the national road policy and road sub-sector administration.
3	Ministry of Local Government	Administering and supporting the Local Authorities and formulating the national policy on urban development.
4	Ministry of Nairobi Metropolitan Development	Administering and formulation of the development policies for the Nairobi Metropolitan Region
5	Ministry of Lands	Land administration and supporting local authorities
6	Traffic Police	Enforcement of traffic regulations
7	Kenya National Highways Authority (KeNHA)	Development and maintenance of national roads.
8	Kenya Urban Roads Authority (KURA)	Development and maintenance of city and municipal roads.
9	Kenya Rural Roads Authority (KeRRA)	Development and maintenance of rural and small towns roads.
10	Kenya Railways Corporation (KRC)	Development and oversight of railways.
11	Rift Valley Railways (RVR)	Operational management of railways (concessionaire).
12	Kenya Revenue Authority (KRA)	Registration of vehicles
13	Local Authorities	Development and management of local and urban areas.
14	Transport Licensing Board (TLB)	Licensing and route allocation of public transport.
15	Kenya Roads Board (KRB)	Administration of the Road Maintenance Levy Fund.

The incumbent government, further, authorises the Ministry of Transport to take charge of the following state corporations which plan and manage road infrastructure in the fragmented planning regime:

- (1) Kenya Roads Board (Kenya Roads Board Act, 1999 and 2007)
- (2) Kenya National Highways Authority (Kenya Roads Act, 2007)
- (3) Kenya Urban Roads Authority (Kenya Roads Act, 2007)
- (4) Kenya Rural Roads of Highways and Building Technology
- (5) Transport Licensing Board
- (6) National Road Safety Council
- (7) National Transport and Safety Authority
- (8) LAPSSSET¹⁰ Corridor Development Authority

Second, fragmentation of planning can be seen as a result of the shifts and transience of planning bodies with reference to political cycles. For instance, during the reign of the Grand Coalition Government in Kenya between April 2008 and April 2013 the responsibilities and management of spatial planning—including transportation planning, in Nairobi were divided between the Ministry of Roads, Ministry of Local Government (the Department of Urban Development), The Ministry of Lands (the Department of Physical Planning) and the Ministry of Nairobi Metropolitan Development (the Department of Metropolitan Planning and Environment) (Nippon Koei Company Limited et al., 2014). After the promulgation of the new constitution of Kenya in 2010 and the ascension of a new political dispensation subsequent to general elections held on 4th March 2013, at the beginning of April 2013, the new president of Kenya abolished some ministries and created new ones. These same planning responsibilities were then shifted to the Ministry of Devolution and Planning, the Ministry of Transport and Infrastructure, and, the Ministry of Lands, Housing and Urban Development (Nippon Koei Company Limited et al., 2014). These were government ministries with new executive heads, departments with new relationships and different inter-relationships from their predecessors. New autonomous bodies were created to manage roads. Since the Kenya-Northern Corridor Transport Improvement Project (KNCTIP) and the Thika Highway Improvement Project (THIP) were conceived as inter-regional highways systems they were planned, designed and managed under the Kenya National Highways Authority. There exists little evidence, if any, that the City County of Nairobi

¹⁰ This is a set of transport infrastructure projects linking the proposed new Kenyan port at Lamu with Juba the capital of Southern Sudan and Addis Ababa the capital of Ethiopia.

(CCN) was involved in their planning, design or implementation. However, the CCN intermittently deploys traffic marshals to guide traffic and enforce traffic regulations within the city in direct competition with the police officers of the Traffic Department.

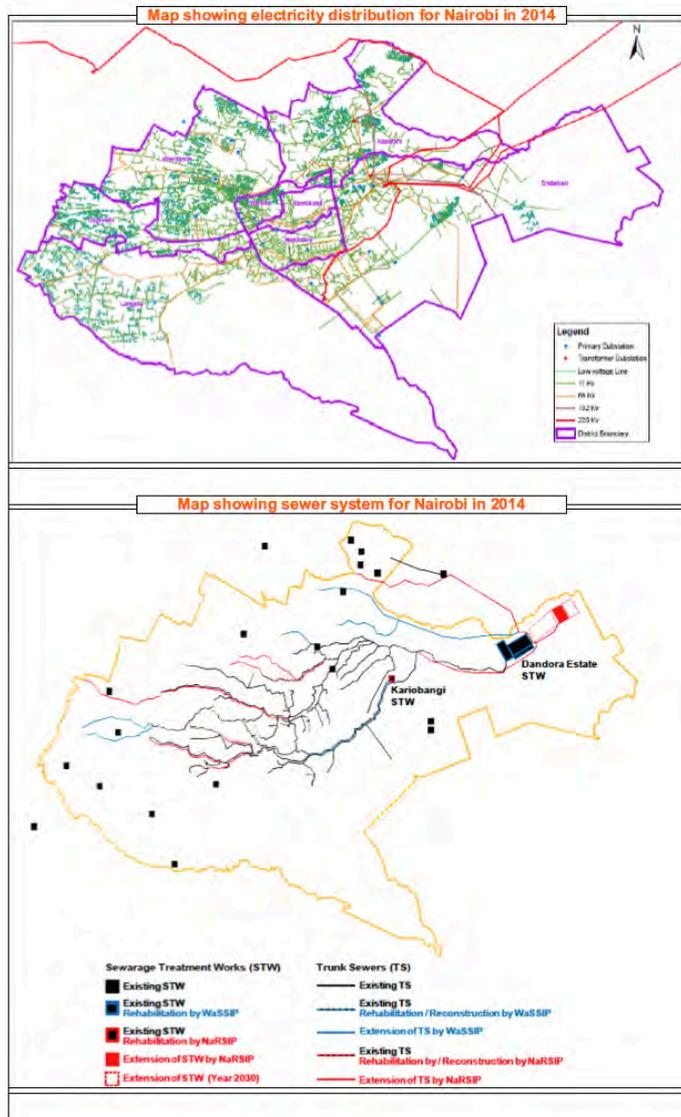
Third, transportation planning is fragmented by time. The current urban plan, the Nairobi Integrated Urban Development Master Plan 2013, has little relationship with the transport corridors that have been constructed in Nairobi since 2006. The transport corridors that have been transformed were envisioned in 1973 long before they were implemented. Their approval and implementation have ostensibly been superseded by the growth of the city and by the evolvement of contemporary theories of urban growth and traffic management (Emig and Ismail, 1980). However, it is interesting that even in 1973 the NUSG opposed the expansion of highways in Nairobi as they would generate rather than solve traffic problems (Emig and Ismail, 1980, Nairobi Urban Study Group, 1973). While literature from the Global North on the unsuitability of the freeway as the transportation solution for increased vehicular traffic exists (Cervero, 2003, Downs, 2004, Duany et al., 2000, Noland and Cowart, 2000, Youn et al., 2008), the blind zeal, token public participation and technical clumsiness with which highway expansion projects have been implemented by the Government of the Republic of Kenya late in the aughts gives credence to the notion that insidious forces camouflaged by the rubric “large highway infrastructure projects for economic and social transformation” drove the implementation agenda. This proclivity towards freeway projects as a solution for increasing vehicular traffic volumes is a key tenet of modern planning enconced in the bold futuristic urban proposals of Le Corbusier (such as *Villa Radieuse*) and Frank Lloyd Wright (the Broadacre City proposal) (Corbusier and Boesiger, 1972, Scott, 1998). Its approach to transportation planning is characterised by the separation of urban functions, the promotion of urban sprawl, a privileging of the automobile over other modes of transportation and the segregation of local traffic from through traffic (Dewar and Todeschini, 2004, Dewar et al., 1977, Scott, 1998). Non-motorised access onto the highway is prohibited except in a handful of intersections where it is practically inevitable and the differentials between mobility and accessibility are dramatically increased (Beukes, 2011). The consideration that wider highways cut deeper through the social fabric of existing communities separating them more and severely restricting social access for the young, the old and the disabled underlines the predominant philosophy of design: the highway is conceived as a pipe where successful design consists, exclusively, of the rapid flow of cars (Jacobs, 1961, Scott, 1998) rather than the fostering of the qualities of social space at the interface of streets and buildings that enclose them. This is in sharp contrast to the actual requirements of a city in the Global South like Nairobi which contains more pedestrians than motorists (Nippon Koei Company Limited et al., 2014) and has suffered the adversities associated with high social and economic inequalities since colonial times (Anyamba, 2006, Emig and

Ismail, 1980, Myers, 2011). Since the intended highway projects cut through existing communities it would be more prudent and plausible to consider Development Oriented Transit (the diametric opposite of Transit Oriented Development) as a means to preserve community and retain social cohesion. Development Oriented Transit in a built up scenario would serve as the practical method for applying context-sensitive design. Rather than taking the expansion of major highways as the predominant means of addressing traffic congestion, an exploration of multiple modes of transportation with an emphasis on the provision of reliable mass transit and alternatives for non-motorised transport would be more appropriate. As of February 2015, with the reductions in the price of fuel, the new highways are more congested with traffic than was the case before the implementation of the traffic corridor improvement projects on Mombasa Road and Thika Road¹¹.

In *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*, Graham and Marvin (2001), describe the ways in which infrastructure can fragment the experience of the city. Their integrated analysis of infrastructure goes beyond highway infrastructure into the networked infrastructures of information and communication technologies. They justify this analysis as a conflation of current trends that are manifest in different types of infrastructure across the world. However, premising analyses of the infrastructure of the Global South on similar justifications would not be appropriate: in much of the Global South—particularly sub-Saharan Africa—new large infrastructure development projects are not developed as a bundle of concurrent isotropic networks. They are developed intermittently, in fits and starts, and in piecemeal initiatives that waver on the flaky priorities of the political elite. In Nairobi, for example, basic infrastructure including water supplies, sewer lines, power mains and streetlights, among other utilities continue to exist in various conditions of functionality and to operate with fragile maintenance regimes because formal approval, planning and management of infrastructure continues to be fragmented (see map 3.0 and map 3.1). In cases where even relatively new hardware has been installed, utilities may not actually be provided or may be available only intermittently—such as is often the case in the dry season months when water is rationed in the Nairobi Metropolitan Region. Just two years after practical project completion, streetlights on the transformed highways work on certain stretches but not others. Nairobi’s urban streetscape is littered with the rusting detritus of abandoned former street lighting projects even within the

¹¹ For descriptions of traffic conditions experienced in Nairobi as of February 2015 see <http://www.standardmedia.co.ke/article/2000154220/cs-michael-kamau-and-evans-kidero-release-plans-to-ease-traffic-jam-in-nairobi> (accessed on 12th March, 2015), <http://www.jumia.co.ke/blog/nairobi-traffic-jams-driving-shoppers-online-online-retailers-rise-traffic-congestion-gets-worse/> (accessed on 15th March, 2015), and <http://www.businessdailyafrica.com/Heavy-traffic-congestion-linked-to-lower-fuel-prices/-/539546/2606866/-/7qy6aw/-/index.html> (accessed on 23rd March, 2015).

new highways. In peri-urban areas ‘opened up by the new highways and the bypasses’ water supplies are provided by the efforts of communities and individuals rather than county or national governments.



Map 3.0 (above) and 3.1 (below): A comparison between existing and planned electricity distribution networks and existing and planned drainage systems (storm drains and sewers) in Nairobi in 2014. Infrastructure networks in the Nairobi Metropolitan Region are planned, designed and developed fragmentarily. (Source: JICA, 2014)

In the theoretical realm questions, then, remain as to who planning is for. How effective is the fragmented transportation planning (and urban planning) model used in Nairobi and whose interests does it serve? Why, with various overlapping responsibilities, frequent changes of institutional turf with political cycles, and persistent operational failures, has this model endured? How can various planning agencies integrate their work? How has the city coped with a fragmented infrastructure for so long?

3.3 ROAD INFRASTRUCTURE ECONOMICS

“A real ‘subjectivist revolution’, (...) frees economic theory from any consideration of social values and leaves only the self-interested, calculating individual face to face with his coveted objects.” –Gilbert Rist

It is formal practice that prior to the commencement of large infrastructure projects financial appraisals are undertaken—usually by the international institutions that provide the financial backing for road transportation projects in the form of long-term loans. The primary aim of these appraisals is to determine whether financial investment in the large infrastructure projects is justified from an economic perspective. The common thread that ties financial appraisals is the argument that investment in large infrastructure projects causes positive social and economic transformations within the regions that these projects, ostensibly, serve. This is exactly what happened in the case of the Kenya National Urban Transport Improvement Project (KNUTIP)—of which the Kenya-Northern Corridor Transport Improvement Project is a key component, as well as the Thika Highway Improvement Project (THIP)¹³. A recurrent goal spelt out in both the appraisal reports of the KNUTIP and the THIP is that highway expansion would reduce travel costs and, simultaneously, increase transport efficiency making the peripheral areas of the Nairobi Metropolitan Region more accessible. This would then result in a decrease in the cost of doing business in Nairobi, encourage business and raise the National Gross Domestic Product. Conspicuously missing in these appraisal reports is the consideration that the construction of highways and the opening up of hitherto ‘locked potentials’ of land and natural resources within the Nairobi Metropolitan Region (NMR) immanently causes rises in the costs of land within the city region. This effect is already shown to occur along many transport corridors (Boarnet

¹³ The public versions of the appraisal reports for the Kenya-Northern Corridor Transport Improvement Project can be found here: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/07/16/000333037_20120716234539/Rendered/PDF/673500PAD0P12600900IDA0R20120018801.pdf (accessed on 28th March, 2015), and the appraisal report for the Thika Highway Improvement Project can be found at http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Kenya_-_Nairobi-Thika_Highway_Improvement_Project_-_Appraisal_Report.PDF (accessed on 28th March, 2015).

and Chalermpong, 2001, Carlson et al., 1996, Moore et al., 2001). Consideration is also not made of how highway construction fits within other social and economic sector reforms intended to encourage business growth for a wide range of business sizes and models or how the accruing economic benefits will be distributed primarily among the communities displaced or traversed by the completed large highway projects. The point on how the distribution of economic benefits from the highway is to be achieved is particularly important given the assertion by Calderon and Serven (2008), that, “*infrastructure development (...) has a positive impact on long-run growth and a negative impact on income inequality.*” Consequently, for Kenya, a country suffering gross social and economic inequalities since independence, (Anyamba, 2006, Emig and Ismail, 1980, Gakuru and Mathenge, 2011) and with an income Gini coefficient of 47.7 in 2013¹⁴ which, apparently, is getting worse (Gakuru and Mathenge, 2011), highway expansion programmes are the worst possible projects for addressing income inequalities and promoting positive social transformation. Conspicuously missing also from the economic justifications for highway expansion are the social and environmental cost of the externalities of additional highway construction: air pollution, fatal crashes, traffic noise, the loss of flora and fauna, the loss of social and community ties and so forth. Most telling is the manner in which economic calculations ignore evidence from multiple studies that suggest that highway expansion does not necessarily solve traffic congestion problems or increase efficiency of movement in the long term (Cervero, 2003, Hansen, 1995, Mumford, 1963). Mumford (Mumford, 1963: 238) presents the case most vividly—including how it may reverse even economic growth—when he writes that,

“In order to overcome the fatal stagnation of traffic in and around cities, (...) highway engineers have come up with a remedy that actually expands the evil that it is meant to overcome. They create new expressways to serve cities that are already overcrowded within, thus tempting people who had been using public transportation to reach the urban centers to use these new private facilities. Almost before the first day’s tolls on these expressways have been counted, the new roads themselves are overcrowded. So a clamor arises to create other similar arteries and provide more parking garages in the center of our metropolises; and the generous provision of these facilities expands the cycle of congestion, without any promise of relief until that terminal point when all the business and industry that originally gave rise to the congestion move out of the city, to escape strangulation, leaving a waste of expressways and garages behind them.”

In fact, “*to increase the number of cars, to enable motorists to go longer distances, to more places, at higher speeds [should not] become an end in itself*” (Mumford, 1963). So what should the end or purpose of a transportation system be? Mumford admits that

¹⁴ For a report on Kenya’s Gini coefficient see <http://hdr.undp.org/en/content/income-gini-coefficient> (accessed on 31st March, 2015).

though the direct and indubitable economic benefits of highway construction accrue from the consumption of “*ever larger quantities of gas, oil, concrete, rubber, and steel,*” economic growth does not make up the “*essential purpose of transportation.*” He (Mumford, 1963: 236) contends that,

“The purpose of transportation is to bring people or goods to places where they are needed, and to concentrate the greatest variety of people and goods within a limited area, in order to widen the possibility of choice without making it necessary to travel. A good transportation system minimizes unnecessary transportation; and in any event, it offers a change of speed and mode to fit a diversity of human purposes.”

This argument presents the fundamental requirement for transportation systems to be integrated and multiple, both motorised and non-motorised, because “*each transportation system has its special use; and a good transportation policy must seek to improve each type and make the most of it. This cannot be achieved by aiming at high speed or continuous flow alone*” (Mumford, 1963). To further illustrate this point, Mumford deploys vignettes: a city resident seeking social contact with friends or chance meetings with acquaintances living within their neighbourhood would do with “*a stroll at two miles an hour in a concentrated area, free of needless vehicles.*” But for a surgeon needing to rush to a patient one thousand kilometres away “*the fastest motorway is too slow.*” And even the fastest mode of transportation—flight, may be unreliable or slower than, say, rail transportation during adverse weather. So, apparently, “*there is no one ideal mode or speed: human purpose should govern the choice of the speed of transportation.*” Mumford (1963) concludes that, “*this is why we need a better transportation system, not just more highways*”.

It is evident, then, that appraisal reports prepared by international donor institutions for highway infrastructure projects lean heavily towards econometric models that are supported by value-free statistics—such as expected GDP growth—rather than considerations for the sustenance of the complex social and economic context(s) within which highways work. As one eminent critic, the economist Gibert Rist (2011: 8), aptly puts it,

“Just like classical mechanics or physics, which ignored air resistance or friction in establishing their laws, economists mostly operate in a social vacuum emptied of the specifics of human life. Such is the price of ‘scientificity’. To achieve it, one has to leave out history, nature, social practices and relations, emotions—in a word, life.”

In this mode of economic thinking the construction of highways is seen to improve access to basic services, to promote human development and to boost industrial productivity and spur economic growth (African Development Fund, 2007, African Development Fund, 2009). But how exactly that happens is left to chance and driven, largely, by prevailing populist pro-government propaganda tinged with tales of Kenya’s

delayed industrial renaissance. However, while this school of thought within development economics promotes highway construction as the panacea for economic growth, social transformation and positive urban development, other schools of thought within economics raise pertinent objections against highway construction in the Global South. The fundamental pickle with regard to road transportation infrastructure is why economic perspectives are considered paramount and definitive relative to other views as a measure of development in politics and planning¹⁵. Rist (2011: 1) argues that, decision-making in the realm of politics (and planning) should,

“(...) overcome the sense of fatalism associated with economic logic, whose conclusions are presented as if they were inexorable. Since economics is only one possible view of the world, not only is it legitimate to see things differently, but it has become necessary to throw off the constraints that economics imposes and to construct it in a different manner.”

Rist (2011) and Keen (2007), challenge the vision and worth of the field of economics in a world where, though economics has come to dominate political decision-making, living conditions are getting worse for the majority of people, social equalities are on the rise and the natural environment is irreparably damaged. Considering the unfolding socio-economic quagmire, the prescription of economic growth as the panacea for unemployment and economic downturns—and mainstream economics’ accompanying reductionism of social relations and commodification of nature, is questionable. But this is extraneous to mainstream economics. How about its own internal contradictions (Keen, 2007)?

Even within the realm of infrastructure projects supported by mainstream economics theory¹⁶, paradoxes abound. With regard to road transportation infrastructure projects in particular, ambiguities persists about the economic benefits of highways especially when they are projected spatially to cover transnational regions as is the case with the Kenya-Northern Corridor Transport Improvement Project and the Thika Highway Improvement Project (Teipelke, 2014). The relationship between regional infrastructure projects and social development at the local scale is at best tenuous and at worst

¹⁵ Steven Keen, 2007, offers a fundamental criticism of economics as an intellectual field. He argues that, “virtually every aspect of conventional economic theory is intellectually unsound; virtually every economic recommendation is just as likely to do general harm as it is to lead to the general good. Far from holding the intellectual high ground, economics rests on foundations of quicksand.”

¹⁶ My reference here to mainstream economics theory refers to those theories of economics, defined by commodification, used to justify the prioritisation of large road transportation infrastructure projects in the Global South. As Rist (2011) refers to these theories as ‘standard’ economics and clarifies that, “*economic ‘science’ is not a homogeneous body of doctrine: it includes a number of rival schools that have followed in succession or continue to oppose one another (classical, Marxist, neoclassical or marginalist, Keynesian, institutionalist, contractualist, monetarist, regulationist, neoliberal, socio-economic or evolutionary).* (...) *The truths that it professes vary (...) across history [and] with one’s ideological affiliation, which, despite claims that certain ‘laws’ or theorems are self-evident, is often a matter of the dominant political agenda.*”

unverifiable (Ayogu, 2007, Scott, 1998). The development of highways while seen to open up the ‘locked potential’ of hinterland regions for economic development by some economists is condemned for expropriating and exploiting the resources from the hinterland for its own growth and sustenance while exporting its adverse environmental and economic effects to the hinterland (Elkin et al., 1991). In fact, as Mumford (1963: 241) claims, in developing countries where public resources are severely limited, it is a truism that,

“the vast sums of money that go into such enterprises drain necessary public monies from other functions of the city, and make it socially if not financially bankrupt”

Other economics scholars contend that highway construction projects conceived as regional transportation corridors generate a transport corridor development bias. This creates unbalanced economic, social and spatial development within the city regions served by these corridors (Lombard and Ninot, 2012, Söderbaum and Taylor, 2003). In such cases the inclusion of local communities into the working of the transport corridor is incidental (Söderbaum and Taylor, 2003) and contingent on informal social interactions and ephemeral events in road space. In Africa, this phenomenon has been investigated in the Maputo Development Corridor (MPC), an inter-regional transport corridor between Mozambique and the Republic of South Africa. It was built beginning 1994 to facilitate trade in the greater Southern Africa region and to spur social and economic development in communities along the transport corridor through trade, tourism and services relating to the cross-border movement of goods. Söderbaum and Taylor (2003: 685) lambast the neo-liberal paradigm behind the planning, design and implementation of this corridor that favours foreign direct investment over actual social development in the region as,

“...[a] design (...) for big business [where] local participation is (...) by coincidence (...) with the real intention to increase export growth and GDP rather than [promote] people-centred development.”

The state is seen in this particular paradigm to abdicate its duty of protecting local communities not only from the adversities of external shocks but also from the strangeness of the imposition of a disruptive infrastructure upon their natural landscape. The foreign direct investment of the Public Private Partnerships ploughed into the project are strongly suggestive of collusion between the (South African and Mozambican) political elite and holders of transnational capital rather than a concern for the transportation needs or social needs of local communities that are often used as a front for these projects. (Söderbaum and Taylor, 2003).

The specific transport corridors this study is carried out at in Nairobi were, prior to their transformations, usable and vibrant not derelict (see plate 3.0). In fact, the old Thika Highway had been repaired and re-carpeted three months prior to the commencement of

construction of the Thika Highway Improvement Project (THIP). Before the commencement of the JKIA-Athi River stretch of the Kenya-Northern Corridor Transport Improvement Project (KNCTIP) an additional lane and pedestrian pavements were added on both sides of the Mombasa Highway. Knowledge that highway expansion projects are not viable options for dealing with traffic congestion (Dewar and Todeschini, 2004, Noland and Cowart, 2000) could have provoked a reconsideration of the planning, design and implementation of the proposed highway projects.



Plate 3.0: A picture of the old Thika Road taken in January 2011 before the commencement of the Thika Highway Improvement Project. (Source: William Oeri).

But the body of research questioning the appropriateness of large highway infrastructure projects was ignored. Instead, politicised visions of utopia were put ahead of public interest in the desire to bedazzle that same public with a set of unprecedented infrastructure projects—regardless of whether those projects would succeed or fail. Today, the expected positive relationship between the current infrastructure expansion projects on one hand, and, industrial productivity and economic development in local and regional communities on the other hand, as presented in the appraisal reports before both projects were realised, is repudiated by the worsening congestion that throttles road transportation in the Nairobi Metropolitan Region along the transformed transport corridors¹⁷. Questions arise from the preceding economic assumptions on causalities; that infrastructure expansion projects induce positive economic and social transformations. In Nairobi it is evident that there are physical transformations. But are they the transformations intended—the transformations vaunted in official government documents such as Kenya Vision 2030? Clearly, they are not. So why were these

¹⁷ For a sample report on the traffic conditions along transformed road infrastructure and how it affects everyday life as per April 2015 see: <http://www.nation.co.ke/counties/nairobi/Traffic-jam-makes-missing-flights-the-new-normal/-/1954174/2676972/-/74hec2/-/index.html> (accessed on 4th April, 2015).

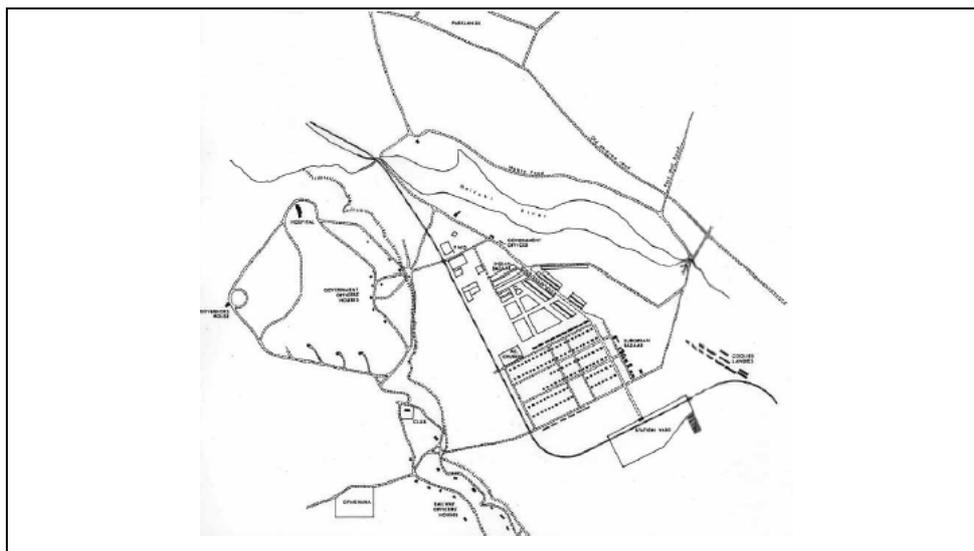
projects implemented in spite of the ambiguity of the economic data (and, in fact, negative data on their economic benefits) and the social inequalities they foster rather than resolve? Why were viable multi-modal transportation alternatives ignored? Why were their likely effects on the self-determined welfare of contiguous communities taken for granted? Why were they prioritised over, for instance, water projects in a metropolitan region that has struggled with unreliable supplies of clean piped water while supporting a growing population?

3.4 URBAN STRUCTURE

In this section I discuss how the growth and urban development in the Nairobi Metropolitan Region affects and is affected by highway infrastructure development from a historical and theoretical perspective.

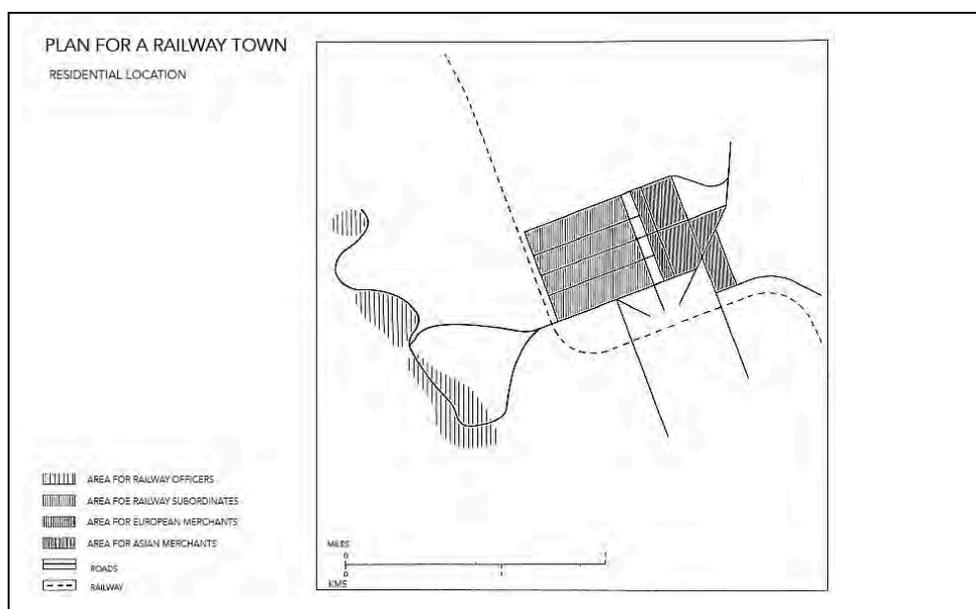
3.4.1 *Roads in the Plan for a Railway Town, 1898*

Nairobi's first plan, the Plan for a Railway Town (see map 3.2) was drawn up in 1898 by the Assistant Engineer Arthur F. Church supervised by Chief Engineer Major Whitehouse and Engineer Colonel Paterson.



Map 3.2 The structure of roads in Nairobi's first plan drawn by Arthur F. Church. Roads linked racially segregated zones—such as the European Bazaar and the Asian Bazaar—and functional zones in the metropolitan area. (Source: Stephen Mills and Brian Yonge)

Historically, Nairobi was planned as a segregated city (Emig and Ismail, 1980, Myers, 2003, Rakodi, 1997) following the establishment of the East African Protectorate in 1895 and the arrival of the railhead at the present site of Nairobi. This segregation cut the city population in two ways; according to race and according to class. The segregated spatial structure was an extension of the social, economic and political structure of the colonial era when and where Europeans occupied all prime decision making positions but Asians and Africans were banned or barred from direct involvement even in their own political affairs. The fledgling town was centred around the railhead that had already reached Nairobi (Emig and Ismail, 1980). It was planned with respect to a strict racial and social hierarchy with residential areas definitive of race and rank set about the infrastructural armature of the Nairobi Station and its railway yard. The needs and priorities of European and Asian administration employees of the Kenya-Uganda Railway were considered paramount in this layout. The town was defined by functional areas: residential, social services, traffic and commerce. Residential areas were separate for the all-European senior officers, nearly all-European junior officers, European and Asian subordinate staff and traders (see map 3.3).



Map 3.3: Nairobi's first plan called the Plan for a Railway Town showing the distinct residential areas in the railway yard. In the plan roads are perceived as effective as racial and social markers. (Source: Emig and Ismail, 1980)

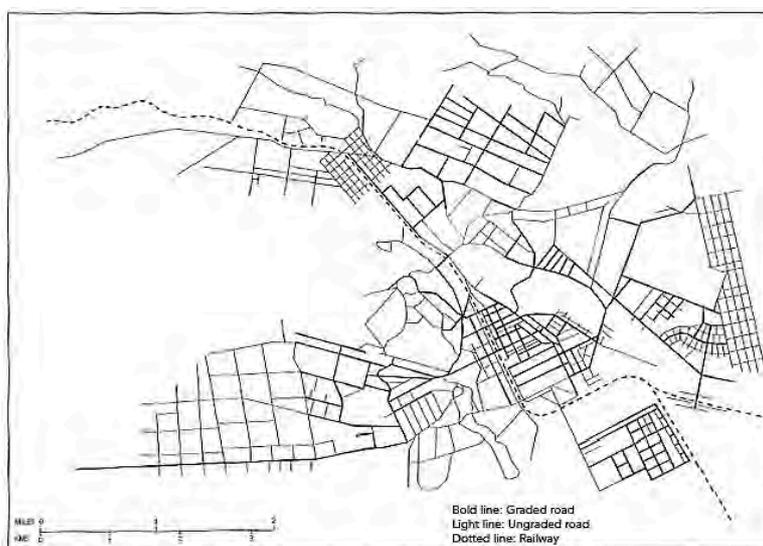
The locations of these separate areas for residences, particularly their natural features, their spatial extents, their distance from the railway yard and their elevation, directly reflected the status of each of these groups (Emig and Ismail, 1980, Mills and Yonge,

2012, Murunga, 2006). Provisions were not made in this plan for the Asian coolies providing menial labour to construct the railway or the black African labourers employed in the railway town. Though hardly any cars existed in Nairobi at this time, roads were laid out as the primary planning armature and the residential areas were separated from the rest of the town by a palisade surrounding the railway yard. The configuration of the road system, thus, reinforced the segregation that began in the railway yard. For instance, Emig and Ismail (1980: 10) describe how,

“Station Road (currently Moi Avenue) separated the bazaar from the subordinates’ residential area. The main road that connected all residential areas and ran parallel to the railway to the southeast separated the bazaar and the subordinate residential area from the station yard. Thus, the roads clearly made boundaries between the different residential areas and separated the rest of the town from the station yard.”

3.4.2 *Roads in the Plan for a Settler Capital, 1927*

By the time the 1927 plan for Nairobi, dubbed the Plan for a Settler Capital (see map 3.4) was made, Nairobi’s town planners had come to accept the car as the predominant mode of mobility (Emig and Ismail, 1980). New roads were built directly in favour of the upper classes of society who could afford automobiles. The configuration of these new roads in the existing town plan also further entrenched the racial/class segregation of the railway town (Mills and Yonge, 2012, Nippon Koei Company Limited et al., 2014).



Map 3.4: The expansion of roads into suburbs to cater to the needs of the emergent bourgeoisie in Nairobi’s 1927 Plan for a Settler Capital. (Source: Emig and Ismail, 1980)

Emig and Ismail (1980: 24) note that,

“(...) although there was an acute shortage of housing and amenities in existing residential areas for Africans and middle and lower class Asians, the ‘Plan for a Settler Capital’ gives priority to the lay out of roads for the benefit of the upper class, so much so that £252.266 was to be spent on just the lay out of roads, out of a total estimated cost for the whole scheme worked out by the plan, of £351.266, or approximately 72% of the budget.”

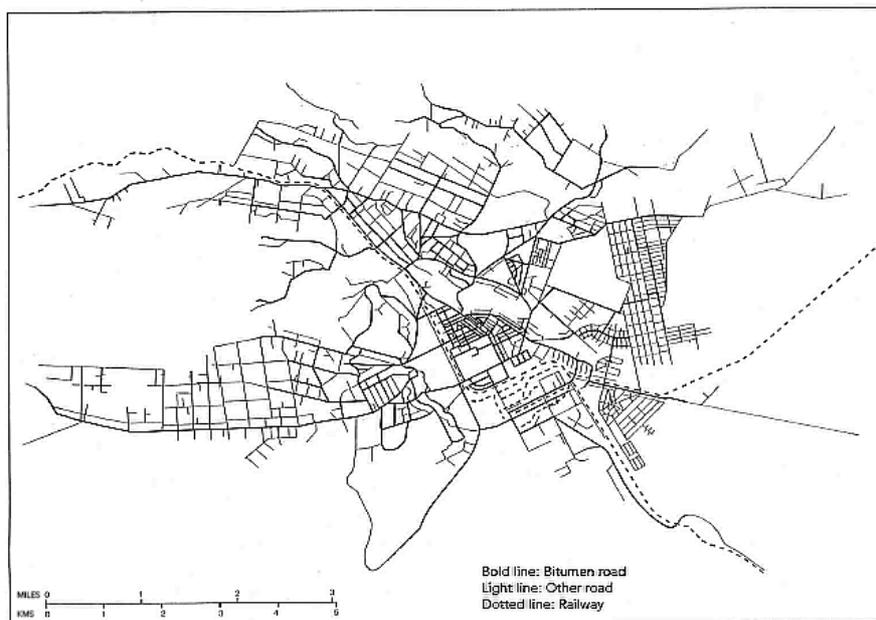
Since the plan for the railway town had focused roads into the railway yard creating a radial pattern the growth of the town along these roads had led to intense concentrations of all sorts and conditions of traffic in a few busy overcrowded areas (Nairobi Area Town Planning Authority, 1927: 5). This new plan, according to Emig and Ismail (1980: 25), intended to create:

“(...) direct communication between such suburbs as Parklands, Kilimani, Kabete Road, Muthaiga; or indeed any external linking up of the main roads converging on Nairobi town for the purposes of through traffic.”

From the foregoing argument it is possible to deduce that Nairobi’s 1927 road traffic plan was largely intended to ease automobile transport by Nairobi’s white bourgeoisie.

3.4.3 *Roads in the Plan for a Colonial Capital, 1948*

In the 1948 Plan for a Colonial Capital (see map 3.5), the road network was, again, used as a tool for the reinforcement of class and race segregation. This is the first time that roads were classified into (a) the national and regional roads whose main function is to separate city functions into distinct zones—according to the prevailing modernist planning credo of the time, and to preserve enclaves of race and class, and, (b) the main local roads which had two functions according to their location; to enclose the different segregated residential neighbourhoods and to demarcate distinct functional zones closer to the central city (Emig and Ismail, 1980). In this plan, against the concerns for traffic congestion raised in the 1927 Plan for a Settler Capital, traffic from roads converging into the city was all forced to pass through the city in the belief that commuters would stop to purchase supplies of various kinds or to service their cars and that this would, in turn, foster the growing city’s economy. No provisions were made in the plan for mass transit or non-motorised transport. As the only provision for non-motorised transport meant to serve “*the man living in the official housing zones and working in the industrial or commercial centre of the city*” (Emig and Ismail, 1980).



Map 3.5: Nairobi's radial road network in the 1948 Plan for a Colonial Capital. (Source: Emig and Ismail, 1980)

Cycle tracks were considered to be 'too expensive', a simultaneously racist and elitist stance (Emig and Ismail, 1980: 46) as,

"(...) those living in the official housing zones were (...) Africans and lower class Asians and thus provisions for making cycle tracks for them would cost the city 'a lot', but on the other hand, all provisions could be made to ease the upper class' daily trips to work. (...) Road planning, like zoning [was] an important tool at the disposal of bourgeois planners in satisfying the needs of the upper class."

Public Road Passenger Transport was cursorily dismissed in this plan as being beyond the scope of a Master Plan report. This further reinforces the notion that planning was an express tool for meeting the aspirations of the colonial elite, and for the repression of every other social group living, trading or working within the Nairobi Metropolitan Region. Interestingly, this is also the first time in planning that the position of Nairobi was considered to be advantageous within the context of East Africa—a direct expression for the new aspirations of the fledgling business and industrial elite. Emig and Ismail (1980: 54) contend that,

"the aim of the Master Plan was to make Nairobi attractive for industrial investment. The infrastructure of the city was to be built to suit the localisation of industry and other

needs of the new industrial bourgeoisie. Nairobi was [thus] not only to be the capital of Kenya, but of East Africa.”

3.4.4 *Roads in the Plan for a Metropolis, 1973*

The 1973 Plan for a Metropolis, the first made after Kenya’s independence in 1963, substituted class segregation for the race/class segregation of the previous plans. The intention of the plan could be read (Emig and Ismail, 1980: 67):

“(…) in relation to the strategy for the location of other urban functions (…) as traffic is (…) a reflection of the conditions and needs produced by the social division of labour and the social division of space.”

The plan retained the radial pattern of roads from the central city with urban functions segregated from each other as before. The plan established a hierarchy of roads with the roads leading into the central business district and the industrial area being prioritised as a boost to commerce and industry. The plan was not made with regard to traffic congestion in the central city as recommendations were made that employment in the central area be raised to 100,000 by the year 2000 from 49,000 in 1970, a proposal that would increase traffic congestion in the city. Perhaps this was a planning strategy reflecting a global shift; a shift that saw Nairobi’s planners aspire to turn it into the city for commercial opportunities and industrial productivity in the East Africa region.

Three different (and rather absurd¹⁸) strategies for metropolitan transportation were presented each proposing a widening of roads leading into the central area into 10 to 18 lane highways. The new road network was configured as a modified grid system of highways serving the more affluent neighbourhoods in the northern and western areas of Nairobi (Nairobi Urban Study Group, 1973). The eastern neighbourhoods of Nairobi—those containing low-income housing and industry—were left out of the proposed modified grid system of highways. Proposals were also made comparing a railway system with a busway system for mass transit. Even though the plan praised the railway system as the most economically viable Emig and Ismail (1980: 69) reveal how the railway system was rejected for flippant considerations to:

“such factors [as] the provision of employment, the ease of administration and operation, the extent of local experience in the provision and operation of such systems and the relationship between local resources and personnel, and the foreign exchange component and the need for expatriate personnel” .

¹⁸ Emig and Ismail (1980: 65) write about their bewilderment at the summary of findings and recommendations of the Nairobi Urban Study Group, 1973, that are in several cases contradictory and in fact potentially contribute to the worsening of the urban planning problem(s) they are intended to resolve.

This apparent snub of viable mass transit options on grounds of such upper class concerns as the ‘difficulty of administration’ point to vestiges of elitism and parochialism that still resided in the planning of Nairobi even a decade after Kenya’s independence. As the existing public bus system was inadequate, as evidenced by the proliferation of privately-owned *matatu* taxis in the city’s public transportation business (Nippon Koei Company Limited et al., 2014), the plan fails to provide a solution for mass transit for the urban poor leaving them to suffer the brunt of overburdened roads and inadequate transportation planning.

The transformed highways in this study are directly implemented from the tilted social tradition and repertoire of elitist visions of the 1973 Plan for a Metropolis. Their revival, design and implementation follow the exact same strategies for traffic management—strategies whose efficacy and sensitivity to the needs of majority citizens remains questionable and which, as described in the section on road infrastructure economics, are not decidedly pro-poor. They are derived from plans that reinforce the previous segregationist pattern implying that colonialist ideologies ensconced within Nairobi’s previous planning eras have progressively been window-dressed as today’s neo-liberal progress. In terms of urban structure, then, what is the apt response to questions of traffic congestion in cities of the Global South? What urban form might be the result of this response? Mumford makes some suggestions based on broad urban transportation requirements. He (1963: 236) claims that,

“Diffusion and concentration are the two poles of transportation: the first demands a closely articulated network of roads—ranging from a footpath to a six-lane expressway and a transcontinental railroad system. The second demands a city. (...) Major highway systems are conceived, in the interest of speed, as linear organizations, that is to say arteries. (...) [However] arteries [should not be] overdeveloped to the exclusion of all the minor elements of transportation. (...) Arteries must not be thrust into the delicate tissue of (...) cities; the blood they circulate must rather enter through an elaborate network of minor blood vessels and capillaries. (...) The rationale of sound highway development [is] the Townless Highway; and this had as its corollary the Highwayless Town.”

We see two principles of transportation in these suggestions. First, highways cannot be the sole mode of transportation in cities. Their functioning is best augmented by a simultaneous development of other modes of transportation. And, second, highways ought to be part of transportation systems that integrally work within a balanced urban form, one that is neither extremely dense or extremely sprawled.

3.5 CONTEXT-SENSITIVE ROAD DESIGN FOR DEVELOPING COUNTRIES

“The town is the correlate of the road. The town only exists as a function of circulation and of circuits.” –Deleuze and Guattari.

Building and expansion of road transportation infrastructure in a city inevitably happens within a set of existing local context(s). In these context(s) certain social and temporal patterns have been established, certain patterns of circulation have formed, other infrastructure has been laid around the highway and an ecological system operates within the expansion corridor and beyond. Such social and temporal patterns are a reflection of the symbiotic relationship between highways and roads and the urban processes they affect and generate, and which in turn affect and generate them (Beukes, 2011, Deleuze and Guattari, 1997). It is, therefore, not appropriate to impose a disruptive or unfamiliar network of highways upon the existing urban fabric(s), as this would likely disrupt existing urban social patterns in many unexpected ways (Beukes, 2011). Disruptions to established patterns may, for instance, result in the increase of accidents, severely limit accessibility, kill activities resulting into social and urban decay, and cause undesirable environmental effects (Beukes, 2011, Dewar and Todeschini, 2004).

In the Nairobi Metropolitan Region, I observed many activities; formal, informal and those in-between formal and informal (with a range of economic, social, political and cultural nuances) that obtain succour from their connection to highways, specifically the social and temporal rhythms of people who use highways via various modes of transportation. These activities in turn—by their arrangement, visibility and various degrees of animation—offer vitality and comprehensibility to the urban area. This visual sequence evident from the highway is made of sets of human, physical and temporal ecosystems. With consideration to this mutually reinforcing relationship between highways and the activities that people carry out, in them, by them, around them, on them, and so forth, and the view of this relationship as sets of human physical and temporal ecosystems, key sustainability questions arise. Sustainability as a concept has been accepted since the 1990s as a valid basis for the development of environmental law. According to the World Commission on Environment and Development (1987: 43) sustainable development is,

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

In view of this definition sustainability in highway infrastructure planning should not just refer to highways and their transport function independent of their mutual environmental relationship with flanking communities and their activities. As highway infrastructures are improved, consideration for sustainability requires that the needs

expressed in present generations (including those expressed in the ‘highway ecosystem’) are satisfied. They should not be ignored or disparaged in order to privilege future generations. Haughton and Hunter (1994) defined three principles of sustainability: inter-generational equity, social justice and transfrontier responsibility. Each of these principles is equally important in achieving sustainability. However, inter-generational equity and social justice are of particular import when assessing the sustainability of highway infrastructure projects. Inter-generational equity means that existing generations must carry out their activities and developments in a manner that does not impede or preclude future generations from fulfilling their own needs and having their own aspirations (Haughton and Hunter, 1994). This definition implies the consideration of a range of factors many of which may not be scientifically quantifiable (Beukes, 2011, Gallopín and Modvar, 2005). The question arising from this principle then, is how do highway infrastructure projects help preserve community life and community resources for future generations?

Social justice (or ‘intra-generational equity’), as advocated by the Brundtland Commission, is the principle that requires that poverty be resolved in present generations as it is correlated with environmental degradation (Borowy, 2014, Haughton and Hunter, 1994). Social equity as a principle recommends a more even distribution of resources, wider participation in environmental strategies and policies, and the prioritization of basic needs and common aspirations (Borowy, 2014). The question that arises as a result of this principle is how do highway infrastructure projects take into account basic needs and the common interests of the communities that they affect?

The need for Context-Sensitive Design is underpinned on the reality that urban streets and roads serve many different functions—many of which go beyond movement into community relationships and social rituals (Graham and Marvin, 2001, Kostof, 2005, Myers, 2003, Simone and Abouhany, 2005)—and accommodate variant modes of transport. Therefore, the needs of road users and the activities that are supported by the road must be evaluated and understood before undertaking any new development on road space. It is important to know who uses the road and why they use it. It is also important to know not only how they use the road, but how they are expected to use the road in future (Beukes, 2011). The next section describes how the process of transportation planning and design is often a political process and how assumptions that planning is apolitical or when politicised, as is often recommended, can be democratic and actually representative of people’s needs.

3.6 POLITICS AND GOVERNANCE

“There are only three tribes in Kenya. The haves. The wanna-haves. The have-them-removed.” –Shailja Patel

There is no doubt that roads affect people’s lives in ways that are intensely political particularly in Africa, where basic infrastructure is still lacking in many places. This derives from the fact that in sub-Saharan Africa roads—in various physical conditions—are the most prevalent conduits for the transportation of people and goods (African Development Fund, 2007, Lombard and Ninot, 2012, Wasike, 2001). As discussed in the section on road infrastructure economics road transport is taken, as a given, to play such a crucial role in the national and regional economies, in the transformation of society and in the making of the environment in which people perform their rituals of everyday life in such fundamental ways that the development of road transport infrastructure is often determined by politics (Richardson, 2001). In Kenya, a country which has been run by centralised systems of governance (Myers, 2003), decisions to undertake large infrastructure projects are political and centralised (Wasike, 2001). The government determines which infrastructure projects are prioritised. The government necessarily has to justify these projects to the public—through propaganda and other means—and give guarantees for the repayment of international loans associated with their undertaking.

Until the year 2010 when the new constitution took effect in Kenya and introduced a system of devolved government, the ruling elite often made decisions that favoured their own private interests, the interests of their cronies and the interests of their political retainers. This meant, for instance, that when making decisions on the distribution of infrastructure development projects, these projects were prioritised and initiated in regions whose electorate supported the incumbent government while opposition regions were marginalised as punishment for ‘not supporting the ruling government’ (Cowen and Laakso, 2001). This is the reason for instance why the counties in the central region of Kenya and counties in the lower Rift Valley region of Kenya have had a relatively more extensive and better network of road infrastructure while regions of Luo Nyanza, regions to the North, and regions to the North East of Kenya for a long time had a neglected and crumbling road network (Cowen and Laakso, 2001). But what is the provenance of such partisan politics and its spatial effects in Kenya?

The politics and governance in Kenya are largely based on the African Big Man Syndrome or neopatrimonialism (Bach and Gazibo, 2012)—a type of political leadership forged through the support of tribal alliances and cronyism (Watson, 2010). The resultant politics is characterised by the private ownership of political office and the

concomitant exploitation of state resources and power for personal gain. As Hyden (2006: 95) writes:

“The patrimonial office lacks above all the bureaucratic separation of the ‘private’ and ‘official’ sphere. For the political administration, too, is treated as a purely personal affair of the ruler, and political power is considered part of his personal property.”

As a result of this political dispensation, rulers can be corrupt, tyrannical, tribalistic or nepotistic to varying degrees (Hydén, 2006, Meredith, 2005). This is certainly evident in the current set up of the executive arm of the Government of Kenya all cabinet positions are occupied by cronies or tribesmen of the president and deputy president. This is also true of previous governments dating back to colonial times. Watson (2010: 2) sees the African Big Man Syndrome as a strategy to capture or protect political power because,

“(…) Virtually every ruler carefully selects those he is surrounded by based on the potential for loyalty, often at the expense of competence. [These] can be family members, members from his tribe, or members from his hometown. Some rulers peacefully play off the ambitions of these loyalists, some pay them off, some rotate them in and out of power, some rule by fear and coercion, and some simply trust them. A ruler also has to take into account the attitude of the public. If the ruler believes he is not either respected or feared by the public, then he is likely to view them as a threat to his rule. Thus, he strategizes for this eventuality by either manufacturing legitimacy or ruling violently.”

Cabinet positions, for example, are necessarily accorded on the basis of loyalty to the president or the deputy president. The result is that decisions taken in the guise of ministerial responsibility are tied to sycophancy towards the Big Men and their retinue of loyalists. A corrupt network therefore is forged around the political elite with those in subordinate positions furthering the entrenched system of cronyism. This is for instance illustrated in the plea by the head of the Anglican Church of Kenya, Bishop Eliud Wabukala, and members of parliament¹⁹ requesting the president to declare corruption a national disaster and also in the way the president responded on 26th March, 2015, in his State of the Nation address by suspending five cabinet ministers—including the cabinet minister for the Ministry of Transport and Infrastructure—pending investigation into their conduct²⁰. The controversial link of politics and governance to large infrastructure projects can be alluded to in the Ethics and Anti-Corruption Commission Report, 2015

¹⁹ For these reports see: <http://www.nation.co.ke/news/ACK-Archbishop-Eliud-Wabukala-Corruption/-/1056/2660728/-/i6yglb/-/> (accessed on 27th March, 2015), and <http://m.news24.com/kenya/MyNews24/Declare-corruption-a-national-disaster-MPs-tell-President-20150323> (accessed on 27th March, 2015).

²⁰ For a comprehensive dossier of corruption in the Government of the Republic of Kenya at that time see: <http://www.nation.co.ke/news/politics/President-orders-officials-to-step-aside/-/1064/2667070/-/d8ldb7/-/index.html> (accessed on 27th March, 2015).

where the cabinet minister for the Ministry of Transport and Infrastructure was specifically accused of: “(...) *illegally contracting a local clearing and forwarding firm to handle cargo belonging to the Chinese firm contracted to build the standard gauge railway. He is also alleged to have colluded in the irregular trashing of a road design “leading to massive embezzlement of funds”, manipulated road tender awards and directed billions of shillings of SGR²¹-related in consultancy work to a firm associated with him.*” ²²

What we can understand this accusation (and several others encumbering powerful government officials) to imply is that cabinet positions are pay offs for political loyalists more than they are legitimate vantage points for pushing forward development initiatives or reform agendas. In order to retain these loyalists the Big Men have to pay them as incentive to remain loyal and to retain their political base(s) (Hydén, 2006, Meredith, 2005, Watson, 2010). Infrastructure development then is not apolitical but aligns with the interest of the political elite and to their conceptions of what they believe will pay off loyalists. Meredith, 2005, classifies the Big Men depending on their rule (and their choices in leadership between possessing public legitimacy or ensuring their own personal security) as:

- (1) prophets (high public legitimacy, low personal security),
- (2) princes (high public legitimacy, high personal security),
- (3) autocrats (low public legitimacy, high personal security), and,
- (4) tyrants (low public legitimacy, low personal security).

In this classification the Kenyan presidency has ostensibly, since independence belonged to an autocrat with social, economic and political development skewed by historical injustices and gross inequalities (Meredith, 2005). And that is because autocratic rulers have only managed to extract public resources for conversion (through corruption, tribalism and nepotism) into private profit rather than into public goods (Meredith, 2005, Watson, 2010). In light of these analyses the relationship of politics and governance with large infrastructure projects in Kenya is illustrated as shown in figure 3.0.

²¹ This is an ongoing railway project being built by the China Road and Bridge Corporation to connect the port city of Mombasa on the Kenyan coast to the hinterland cities of Kampala, Uganda and eventually Kigali, Rwanda. Its conception, design and construction have been mired in political controversy amid claims of corruption and construction flaws.

²² These allegations against the then cabinet minister for transport can be found at: <http://www.businessdailyafrica.com/Senate-reveals-names-on-EACC-List-of-Shame/-/539546/2671598/-/item/1/-/pm8sv3/-/index.html> (accessed on 3rd April, 2015).

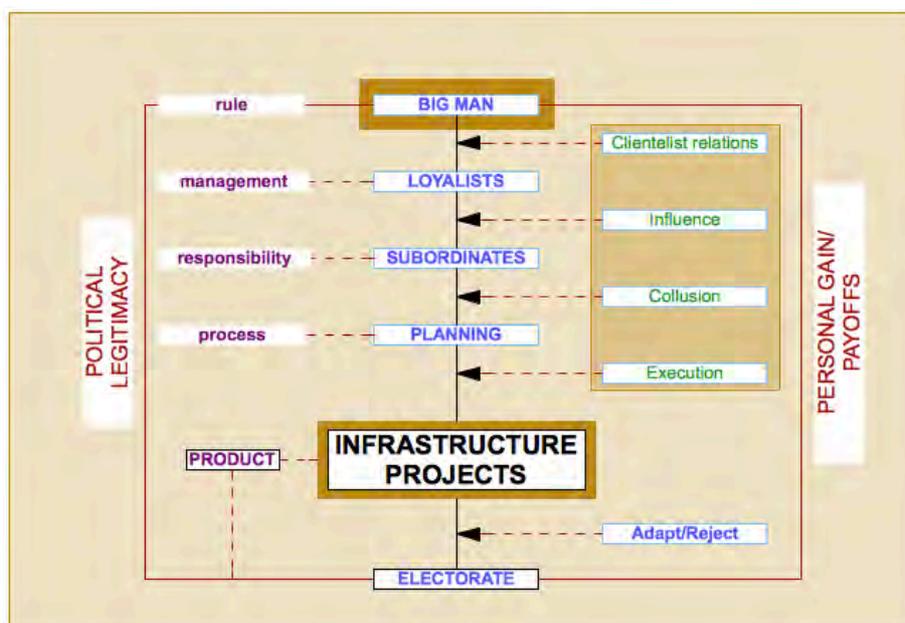


Figure 3.0: A diagram illustrating the influence of politics and governance on infrastructure projects in Kenya. (Source: Author).

The African Big Man Syndrome thrives by dependence on three components: a predominance of personal reciprocal relations in politics (unstable legitimacy), a tendency to build large coalitions of loyalists to retain power (prevalence of informal institutions), and, the accumulation of vast personal resources to pay off these coalitions of loyalists (stable personal wealth) (Hydén, 2006).

Given the adversities of the Big Man Syndrome and its negative effects on social economic and political development in Africa, Watson (2010) has identified three ways, addressing each of the ways in which it thrives, by which it can be deracinated:

(1) stable legitimacy beyond the initial euphoria of political change, (2) the formalisation of institutions, and, (3) unstable personal fortunes that cannot sustain (illegitimate) payoffs to coalitions of loyalists. Of these Watson (2010) recommends the stabilisation of legitimacy and the formalisation of institutions as key to breaking the cycle of Big Men in Africa's politics and development. It is interesting to note that even though many governmental agencies institutions key to planning are formalised, the influence of politics in planning has not abated (Anyamba, 2006, Chabal and Daloz, 1999, Hendriks, 2010, Myers, 2003) with studies showing that professionals are just but technocrats who would rather cozy up to politicians than stipulate principles for public good in their work (Myers, 2003).

3.7 LANDSCAPE URBANISM

“Urban transport is a political and not a technical issue. The technical issues are very simple. The difficult decisions relate to who is going to benefit from the models adopted.” –Enrique Peñalosa

Since the advent of the modern age civil engineering has come to dominate transportation infrastructure design. Its approach to design is lampooned particularly for being hinged on a positivistic view of projects across diverse sites (Bélanger, 2013); roads, railways, bridges, viaducts, harbours, and so forth are the same product everywhere including even in the Global South (Beukes, 2011). This positivist perception of infrastructure is reinforced by a desire for efficiency based on scientific and mathematical criteria. For instance, the continuing expansion of roads in Nairobi has been promoted as the epitome of advancement into a new age of efficiency and prosperity; technology and modernisation. This is seen as an age of Western-style industrialisation in which, according to the Kenya Vision 2030 document (2007), local ways of transporting goods and local ways of doing business are abandoned for globalising space-time ideals. A 24-hour economy dominated by multinational corporations, mass consumption, neo-liberal politics, venture capitalism and automobile dependence are the typical elements of these ideals. The envisaged transformed transport infrastructure projects are, in an immanent distaste for local expertise, knowledge or involvement, built with the exotic input of foreign firms, foreign expertise and foreign funding with local professionals acting only in a capacity to approve what these firms propose²³. There is no conversation whatsoever between government representatives and common people about what transport modes and infrastructural systems are ideal for the urban majority, let alone what transport modes are appropriate for different clusters of individuals in the population distributed across the city region. Once the government decides to embark on a road expansion project, that’s exactly what happens. Public participation is often considered to be an endorsement of rather than a fundamental consideration in the design process right from project conception. Civil engineering design, then, is a matter of technocratic control and technical determinism (Bélanger, 2013).

Civil engineering—even that consonant with context-sensitive design—is averse to political ideology and trans-disciplinary theoretical discourses²⁴. The absence of critical

²³ See instances of this in the report on the standard gauge railway project: <http://mobile.nation.co.ke/news/Kenya-Railways-says-safety-fears-invalid/-/1950946/2681038/-/format/xhtml/item/0/-/fd385f/-/index.html> (accessed on 26th April, 2015).

²⁴ Discourses in civil engineering on context-sensitive design such as that by Beukes (2011) completely leave out considerations of local politics in road design and do not refer to theoretical discourses in disciplines such as geography, ecology and philosophy. Numerical census data is assumed to accurately represent socioeconomic parameters necessary for the satisfactory modelling and design of highways.

discourse has spurred an over-dependence of quantitative logic and numerical precision in achieving accuracy, efficiency and safety (Bélanger, 2013). Less quantifiable and more complex information is reduced by the isolation of variables and the externalisation of what Bélanger (2013) refers to as “dynamic forces”—that persistence of shifts, flux and slides in infrastructural space. The resultant design of modes of transport and the spaces the design of infrastructure generate are mono-functional (Bélanger, 2013, Dewar et al., 1977) with the singularity of use causing immanent ecological, economic and social segregation(s) of varying types. The accompanying land uses in such mono-functional linear and closed systems are also inflexible to change and unable to adapt to unexpected hazards, human accidents and natural disasters (Bélanger, 2013). By such reduction of infrastructure problems to problems with a singular focus and simplified solutions, conditions are created that expose larger urban populations in the Global South to greater risks (Dewar et al., 1977).

Landscape urbanism has presented the most trenchant critiques of civil engineering and transport planning. It is a field that has grown out of the contested theory that urban experiences and urban forms are better defined by landscapes, particularly the ability for landscapes to represent several scales, to locate urban fabrics within their regional and biotic contexts and to design relationships between dynamic environmental processes and urban form (Waldheim, 2006). Landscape urbanism acknowledges the complexity of planning in the landscape (Shannon and Smets, 2010, Waldheim, 2006). It sees planning as inseparable from ecology; that the design of infrastructures including roads is productive of strategy and systems, a design matrix constituted as **landscape infrastructure** (Bélanger, 2013, Nijhuis et al., 2015). It justifies this view by taking urban economies to be reflective of primarily local ecologies. In this local ecology, urban economy comprises three intricately linked ways of humanising landscape: agriculture, city development and the works of engineering such as roads, docks, viaducts, dams, harbours, bridges, canals and so forth (Bélanger, 2013, Shannon and Smets, 2010). In this tripartite ecological assemblage, it is impossible to neglect any one link without adversely affecting the other two. But more important is landscape urbanism’s critique of urban design which has ignored highway infrastructure due to its dystopic and banal nature (Bélanger, 2013). Urban design has concentrated on the design of streets, blocks and buildings in the belief that the qualities of urban environments are determined exclusively by the design of those elements. However, the potentials of infrastructure as the facilitator and the “glue of urbanisation” have been overlooked (Bélanger, 2013). In Nairobi, for instance, the expansion of the highways has been studied more in economics and environmental studies than in planning, architecture and urban design. Again, landscape urbanism challenges the political bounding of areas by nation states and governments into distinct jurisdictions. This kind of bounding fails to take into account the fact that natural systems often transcend

political boundaries. In fact patterns of urbanisation often cross boundaries and diffuse into the natural landscape (Bélanger, 2013, Shannon, 2008). Governments and their jurisdictions as currently defined with physical boundaries are therefore weak in combating the effects of urban transformation. This is certainly true of Nairobi where the city has continued to extend into the greater Nairobi Metropolitan Region—with people who work in the city residing as far as Machakos, Namanga, Limuru and even Nakuru—and where the basic resources needed in the city such as water, food and energy, are obtained from neighbouring counties. Rigid political boundaries are incongruent to the dynamic patterns of Nairobi's growth and practically useless in light of the resources the Nairobi Metropolitan Region requires and the wastes it generates.

The pleas of landscape urbanism, then, are clear and relevant to the resource-constrained cities of the Global South that are at greater risk of climate change. First, that there must be **greater cross-pollination among disciplines** that are, currently, too well defined. That engineering and planning could benefit from bolder environmental, sociological and political detours in their theory and their practice if they hope to be effective in addressing the ecological facets of urbanism. Second, that **cities need to be considered as complex ecological systems** that must balance between hard, formal and determinate variables with soft, informal and indeterminate variables. Cities that endow their citizens with diversity of choices on everyday life—transport, water, food, shelter, energy and so forth—are more liveable and more resilient in the face of climatic change. And third, that **infrastructure must be conceived as extending boundaries** rather than defining them. The larger the infrastructure the more complexity it introduces into the landscape. Infrastructure design must, therefore, both be cross-collaborative and trans-scalar (Bélanger, 2013, Waldheim, 2006).

3.8 SPATIAL JUSTICE

Some debates directly relevant to road transportation infrastructure in the Global South explore how cities should be ordered and how this ordering of the city within its geography both reflects and results into just social relations. The concept of the ordering of cities with consideration to just social relations is broadly defined to as spatial justice (Soja, 2010). The primary questions in these debates are what spatial justice constitutes and why spatial justice deserves consideration in the planning and design of city infrastructure (Williams, 2013, Young, 1990). Soja, 2010, hypothesises that the ordering of the spatial world influences the fair ordering of human relations. In other words, spatial justice emphasises the role of space in producing justice or injustice. An instance of unfair ordering of space occurs when highways fragment the city landscape,

prohibiting certain kinds of movement (such as pedestrian movement) and enabling others (the automobile) (Paterson, 2007, Williams, 2013).

But what exactly is spatial justice? The ordering of the material world reflects power and politics, but simultaneously is made of power and politics (Soja, 1996, Williams, 2008). In the production of social relations, spatial relations concurrently produce justice relationships. Highways, for example, not only reflect power and politics (the effects of certain political decisions), they synchronously impose a certain social order (increased dependence on the car) and political hegemony (the prioritisation of car infrastructure that benefits car owners). Space, then, is more than a container of social process inscribed with man's workings (Williams, 2013): it is the dynamic interactions between material, social and ideological relationships (Harvey, 1996, Lefebvre, 1991b)—a quintessentially tripartite conjuncture. Because space is a process, that is to say, it is made of the relations of things that continually shift, Lefebvre (1991b) calls for a movement from products to production, from commodities to the processes that give spaces their form. Social relationships constitute an important part of this spatiality (Williams, 2013). The implication then is that since justice describes a social relationship, and social relationships are spatially produced, then the relations of justice are spatially produced. Again because the relationships that define space are dynamic, then it can also be argued that justice (as a social relationship) produces space and deploys a knowledge of space (Williams, 2013).

However, justice is a theoretically contested concept. One definition defines justice as the equality of basic human liberties and the distribution of all social inequalities so as to accord the greatest benefit to the least advantaged (Rawls and Kelly, 2001). This prescription of social justice, its proponents claim, can be measured spatially in two ways: first, by establishing the distribution of social goods in space. One example, for instance, can be worked out by asking the basic question, “Does the transportation system cater for all forms of movement?” If that is the case then the demands of distributive justice are met. Another example touching on social inequalities can be evaluated by asking, “Are pollutants distributed so as to disadvantage the economically poor in society?” If this is the case then the space is unjust because it does not meet the criteria for distributive justice (Williams, 2013). Second, social justice may be measured by the content(s) of distributed social goods which are immanent in certain sensory qualities of space (Rawls and Kelly, 2001, Williams, 2013) for instance green, daylight penetration, and passive ventilation. Building or construction codes and regulations that require that the design and construction of buildings, highways, railways and other forms of infrastructure guarantee users and occupants access to such qualities as light, green, air circulation and so forth are set in order to distribute space with certain aesthetic content(s) or sensory qualities. Public space falls in this category of spatial justice because it may be distributed so as to lessen social inequality and simultaneously

improve access to amenities. However, on the other hand, spatial justice is described as a function of lived experience (Williams, 2013, Young, 1990). This view of spatial justice, as a critique of the flaws distributive justice, questions the conception of society—by exponents of distributive justice—as homogenous, as a white patriarchy. Spatial justice as lived experience, instead calls for a more inclusive participatory framework (Young, 1990) including a consideration for the division of labour in society, the characteristics of decision-making, and the nuances of cultural expression. By taking into account such social group differences spatial justice as lived experience allows for the inclusion of marginal and excluded groups of people. Spatial justice then, becomes a form for non-oppression (Williams, 2013, Young, 1990). Advocates of this view regard the city—rather than the countryside—as the locus of spatial justice as history shows that urbanity is forged dynamically (in multiple political ways) by the conglomeration of the social relationships of socially and culturally diverse groups (Young, 1990). The city, on the other hand, exerts its influence over socially and culturally diverse groups by defining their relationships in space (Williams, 2013). Young, 1990, argues that it is only through the affirming of social group differences that group-based oppression can be understood and addressed.

Taking account of these discussions of social justice with respect to road transportation infrastructure projects in the Global South requires two considerations. First, what essential social goods do these roads distribute and how are they distributed in space? Then, second, how inclusive or participatory are the process of planning, design and implementation with regard to the culturally diverse and marginalised social groups in the metropolitan region they serve? It is notable that the appraisals of the transportation corridor improvement projects in Kenya do not specify any social goods that the envisioned expansive road infrastructure projects distribute to communities or road users. References are made to the contributions of road infrastructure improvements to the future economic growth of the country and to the enhancement of traffic flow in the project appraisal documents. But how this will achieve distributive justice with regard to both the context and content of social goods is unclear. Even in the Kenya Vision 2030 document though the prescription social transformation is spelt out as “*a just and cohesive society enjoying equitable social development in a clean and secure environment*”, there is no mention of specific social goods or any consideration for distributive justice. It is ironic that though this document states that, “*by 2030 it will be impossible to refer to any region of our country as remote*”, the projects that have been prioritised and quickly implemented under the umbrella of transportation corridor improvement projects are those within the Nairobi Metropolitan Region where road transportation infrastructure was more expansive and better maintained than it was in the rest of the country. However, in terms of the distribution of social inequalities, the transportation corridor improvement projects were spatially unjust. Communities

located adjacent to the road improvement projects complained of noise pollution, drainage of liquid waste from the road construction into their water sources, dust, and the breeding of mosquitoes in water-filled gaping holes dug by the road building contractors during construction.

With regard to how participatory and how inclusive of minority social groups²⁵ the transportation improvement projects have been—before and during implementation—the joint report by the Kenya Alliance of Resident Associations (KARA) and the Center for Sustainable Urban Development (CSUD) of the Thika Highway Improvement Project (2012: 10-11) gives clues. It states that,

“(...) the perceptions and reactions of citizens who are seeing their lives transformed by the highway have not been part of (...) discussions about the highway. (...) [The public] raised the issue of the lack of proper communication about the project and minimal public participation. (...) Highway users and neighbouring residents are unhappy with the fact that no one communicates to them in advance about road closures and diversions of the of the routes they normally use. A majority of [the public] thought that the project was funded by the Chinese government but did not know any details beyond that. Information about the design, land use, timeframe, (...) and project partners is not easily accessible.”

The respondents cited in the report noted that the needs of pedestrians and people with disabilities were not considered in the design and implementation of the project: the footbridges were both unsuitably located and unsuitably designed. They therefore felt inadvertently compelled to cross the highway as they did before even with the niggling concern that the road had become unsafe. With such an indictment of a large road improvement project in Nairobi’s Metropolitan Region and with others already underway it becomes important to evaluate how spatial justice is affected at various scales by these road infrastructure developments.

So why is spatial justice critical in discussions on road transportation infrastructure in the Global South? First, spatial justice offers an analytical framework in evaluating the productive power of urban space (Williams, 2013). In discussions on, say, the dispersion of highways and the material qualities of transportation infrastructures spatial justice helps to understand what kind of society is produced by their given configuration in space and what type of social relations are, consequently, supported or decimated. Second, spatial justice produces knowledge about the relationship of man with the natural ecology. The charting of the ways in which the production of space produces certain relationships to resources or alters the flow of ecological resources is important

²⁵ I use the term “minority social groups” to refer to those sections of the population that are excluded from involvement in political decisions. However, in Nairobi these groups actually constitute a marginalised majority (Syagga, 2002, Anyamba, 2006).

particularly in debates on environmental justice (Williams, 2013). In spatial justice then it is possible to see both how the state simultaneously produces social relations and alters the relationships between society and nature by prescribing and inscribing infrastructure in space. In debates on road transportation infrastructure in the Global South spatial justice questions how the state uses its power to physically transform space. Hayward, 2003, argues that states play a critical role in constructing social identities and differences, that they help define, institutionalise and order the categories and relations that produce and maintain identity and difference. Williams, 2013, spatialises Hayward's argument by proposing that the state inadvertently structures politics through the arrangement of the city. However, Lefebvre, 1991b, argues that space is often negotiated among many different actors and that, sometimes, negotiation may take the form of outright resistance (Williams, 2013). Since total state control of space is unachievable in this contestation of space among multiple unequal groups, spaces of resistance—differential spaces—are left open (Lefebvre, 1991b). Consideration of spatial justice in debates on urbanism, then, is invaluable since spatial justice must include the negotiation of space between the state and multiple groups (Hayward, 2003).

3.9 MOBILITIES THEORY

The contributions of mobilities to the understanding of urbanism are interesting and relevant to debates on road transportation infrastructure in the Global South. The technological and political transformations in developing countries since the mid-1990s, particularly the growth and now seeming ubiquity of the Internet, mobile telecommunications and their related technologies (such as the famous M-Pesa mobile money transfer service) and the semblance of growing democracy in a formerly autocratically led country such as Kenya form the background to current visions of infrastructure. Mobilities theorists claim that urbanism as it is today is no longer made solely by the physical material artefacts of the city but also by the dynamic material of global movement, information transfer and capital transfer (Urry, 2007). Thus cities exist both as material urbanity and as a shifting *liquidity* (Sheller and Urry, 2003). As such mobility is so critical as an element of cities such that the globalised information society of today is shaped more by mobility rather than by urbanity. In this spirit Sheller and Urry, 2003, protest the snubbing of the car by the social sciences. To Sheller and Urry, 2003, social scientist such as Jacobs (1961) and Mumford (1963) only seem to lament the effects of the car on the city or to argue that a culture of speed has replaced older cultures of urbanism. They give a verbatim example of this in Lefebvre's (1991a: 312-313) critique of the negative effects of the car:

“[C]ity life is subtly and profoundly changed, sacrificed to that abstract space where cars circulate like so many atomic particles. (...) [T]he driver is concerned only with steering himself to his destination, and in looking about sees only what he needs to see for that purpose.”

They see such widely-accepted views of urbanism as a privileging of the mode of dwelling, location, association and architecture of the city at the expense of the way movement constitutes cities as civil spheres (Sheller and Urry, 2003). They, on the contrary, present the car (and, by extension, road transportation infrastructure) as illustrative of a ubiquitous globalisation. They argue that cities in general are defined by automobility (and that even as the cities of the Global South continue to be integrated in the global system automobility is simultaneously on the rise). It is therefore incumbent upon social analysts to study the impact of automobility on social life rather than to criticise automobility. Arguments calling for the study—rather than vilification—of the car by industrial sociology regard use-values (that refers to car culture) and sign-values (the ways in which car ownership affects people’s social status) immanent in car ownership. The positive association of cars to both use and sign values are hinged on contentions that cars boost their owner’s social status, compresses social distance, subordinates other ‘public’ mobilities of walking, cycling, traveling by rail and so forth, and reorganises how people negotiate opportunities for, and constraints upon family life, work, and leisure. The automobility dominates how both car users and non-car users organize their lives through space-time (Sheller and Urry, 2003).

Though mobilities theorists acknowledge that different forms of transport are represented in the phenomenon of global movement their most controversial stance is the association of automobility to the constitution of democracy; that mobility –and therefore automobility, is a democratic right. Sheller and Urry (2003) argue that the sphere of personal freedom, leisure and the freedom of movement is partially guaranteed by the car. They invoke Sennett’s argument (Sennett, 1977: 14. Cited in Sheller and Urry, 2003: 742) that if,

“(...) the unrestricted motion of the individual is to be an absolute right [then] the private motorcar is the logical instrument for exercising that right, and the effect on public space, especially the space of the urban street, is that the space becomes meaningless or even maddening unless it can be subordinated to free movement. The technology of modern motion replaces being in the street with a desire to erase the constraints of geography”

This role of (auto)mobility as a tool for the essential expression of democracy is extended to include the empowerment of women in contemporary society (Grieco and Urry, 2011). As opportunities for work outside the home for both men and women have become more crucial to the financial wellbeing of the families, automobility is seen to widen the choice of available work for women and to enhance safety for vulnerable

groups by plugging the ‘*structural holes*’ in semi-public space (that) are sources of inconvenience, danger and uncertainty” (Sheller and Urry, 2003: 745). Therefore, women’s emancipation is directly aided by automobility. Sheller and Urry (2003: 749) posit that,

“In line with the notion of the democratization of automobility (...) greater access to automobility may be seen as empowering women. (...) Cars afford many women a sense of personal freedom and a relatively secure form of travel in which families and objects can be safely transported, and fragmented time-schedules successfully intermeshed.”

Some mobilities theorists argue that improving mobility and access (on roads) to facilities for health and education is seen as key to the achievement of Millenium Goals in sub-Saharan Africa, including universal primary education, gender equality and reduced child mortality (Porter et al., 2011). Already several analyses of infrastructure in Africa show that road transportation infrastructure networks—in whatever condition—are more expansive relative to other forms of transportation infrastructure (Gwilliam and Bofinger, 2011, Stock, 2012). As such improving roads has the greatest potential for improving the lot even of the marginalised (Porter et al., 2011). It appears, then, that aspirations for the improvement of mobility via the building or expansion of road transportation infrastructure inform the rhetoric that politicians in the Global South invoke as the justification for ambitious road transportation infrastructure projects. Their premises of social transformation are, ostensibly, intertwined in the social emancipation offered by automobility²⁶.

In the Global South, however, idealistic conceptions of what constitutes (postmodern) individual freedoms and how such individual freedoms are defined by (auto)mobility are questionable given the fact that marginalised urban majorities live in poverty (Gachochi and Africa Forum on Urban Poverty, 1999, Jones and Nelson, 1999), do not own cars (Aligula et al., 2005, Gonzales et al., 2009), and, on the contrary, require urgent attention to their basic needs of food, clothing, housing and livelihoods (Jones and Nelson, 1999, Tipple and Speak, 2009). In fact, in practical terms with respect to mobility, most walk to their destinations or use unreliable public transport (Gonzales et al., 2009, Nippon Koei Company Limited et al., 2014, Olima, 2001).

In Nairobi provisions for cars far outstrip provisions for pedestrians and cyclists (Gonzales et al., 2009, Nippon Koei Company Limited et al., 2014). This is evident in

²⁶ An example of how politicians posit that social emancipation at a national level is embedded in road infrastructure transformation can be found in the presidential speech on the opening of the Thika Superhighway where the former President of Kenya Mwai Kibaki states that, “My government recognizes that infrastructure development (...) plays an important role in national unity and integration. As Kenyans interact and do business together, they get to appreciate and value people as well as cultures from different parts of the country. In addition, better roads provide proximity to major commercial centres and open up areas for residential settlement where citizens from different parts of the country can buy or rent houses.”

the intense contestation of space on highways and pavements of Nairobi and other Kenyan cities and towns: car drivers compete with donkey carts, livestock, pedestrians, informal market traders, motorcyclists and cyclists and conflicts (Gonzales et al., 2009, Ogendi et al., 2013) and accidents and pedestrian fatalities increase with the practical implementation of large highway improvement projects²⁷ (Aligula et al., 2005, Ogendi et al., 2013). It is precisely the enduring neglect of public road transportation and other forms of transportation, besides the private car, that calls into question the recent massive investments into expansive road transportation infrastructure projects in the Nairobi Metropolitan Region. Indeed, one sharp critique of the car that is relevant to the situation in the Global South comes from mobilities theorists, Sheller and Urry (2003: 754) who see that:

“Car drivers dwelling within their cars, and excluding those without cars or without the ‘license’ to drive such cars, produce the temporal and spatial geographies of cities as a function of motorized mobility. Pedestrians and cyclists, to a significant extent, are confined to small slivers of the urban public, while many transport users are relatively disenfranchised and excluded from full citizenship.”

Latent democratic ideals held in the lap of automobility are questionable even in the West where car ownership has been more widespread since the 1940s but has declined since 2000—particularly in Europe²⁸. The automobile and its externalities have neither contributed to the bridging of social inequality gaps nor helped to quell discontent concerning public space decimated for purposes associated with automobility. Sheller and Urry (2003: 750) realise that,

“In accordance with early urban sociology’s pessimistic view of the car in the city and political sociology’s understanding on the car’s effect on the decline of the public sphere, many analysts of contemporary social formations understandably continue to equate automobility with inequalities, exclusion, risk proliferation and, of course, environmental degradation. It is no surprise, then, that automobility involves massive contestation.”

With these simmering contextual issues the expansion of road infrastructure in the developing world as a boon to mobility is not just a hard sell, but, an exercise in vanity and a snub of the needs of economically disadvantaged urban majorities. At this juncture it should be noted that the key to the success of road infrastructure

²⁷ In his speech on the opening of Thika Superhighway the President of Kenya, Mwai Kibaki admits that, “despite remarkable improvements of our road network, it is unfortunate that about 3000 people lose their lives annually from vehicle accidents in Kenya.”

²⁸ The report, *Seeing the back of the car*, by The Economist at <http://www.economist.com/node/21563280> (accessed on 12th June, 2015) gives statistics on the stagnation and waning of car ownership and miles driven in 20 countries in the developed world since 2008.

transportation—if it is to deal with issues of social emancipation as well as traffic congestion—the development of affordable and reliable mass transit. History shows that calls for the planning and implementation of public transportation in Nairobi have been met with nothing more than tepid political interest. Since the Nairobi Urban Study Group’s 1973 Plan for a Metropolis no single road public transit initiative has taken root. Yet recent research in sub-Saharan Africa shows that of primary concern to marginalised groups are poor transport access and high transport costs even on poor and unreliable public transport (Porter et al., 2011). The new road transportation infrastructure projects, in reality, do not address these concerns. And my considered opinion is that they were never meant to address the urban transportation problems for the majority.

3.10 EVERYDAY LIFE

“Everyday life invents itself by poaching in countless way on the property of others.” – Michel de Certeau

Road transport and road transportation infrastructure are key elements of everyday life. First, **roads affect people**. Appleyard (1981) illustrated how roads affect daily life by studying residential streets. He showed how as vehicular traffic increased in residential streets, social cohesion and social interaction within the neighbourhood decreased. People who lived on streets with the lowest traffic had more friends, knew more of their neighbours and felt greater pride and ownership of their neighbourhood (Appleyard, 1981). The effect of increased traffic on neighbourhoods was more drastic for those vulnerable sections of the local population—children, the elderly and the disabled. Elderly residents living along these streets felt their neighbourhood had lost its sense of community and felt vulnerable to the dangers of living on a street dominated by fast moving cars, vibrations, trash, air pollution and noise pollution. Families resorted to keeping children indoors away from the busy streets. As people kept off these streets due to the noise, the pollution and the danger of accidents and as they closed off their windows facing the busy streets to keep out dust the streets became increasingly lifeless. Appleyard (1981) shows how residents adapted by changing the internal locations of their activities, changing their activity patterns, feeling helpless, or by outright protest. Though Appleyard’s study did not include many types of neighbourhoods, shopping, mixed use, recreation, industrial districts and so forth, the study clearly reveals how the design of roads affects much more than just the speed of movement and the vehicular throughput along them. Therefore, roads must not only be seen as functional corridors of automobile transport, but must also be viewed as living environments that affect people’s lives on a time-to-time and activity-by-activity scale.

In response to this view, transportation planning has shifted to include components of sustainability and liveability through such interventions as the Sustainable Livelihoods approach (Beukes, 2011, Scoones and Institute of Development, 1998). The Sustainable Livelihoods approach integrates the factors that affect the livelihoods of economically poor people—from the perspectives of the poor people—and assesses the relationship of these factors through an integrated framework (see figure 3.1) and a set of principles for addressing poverty.

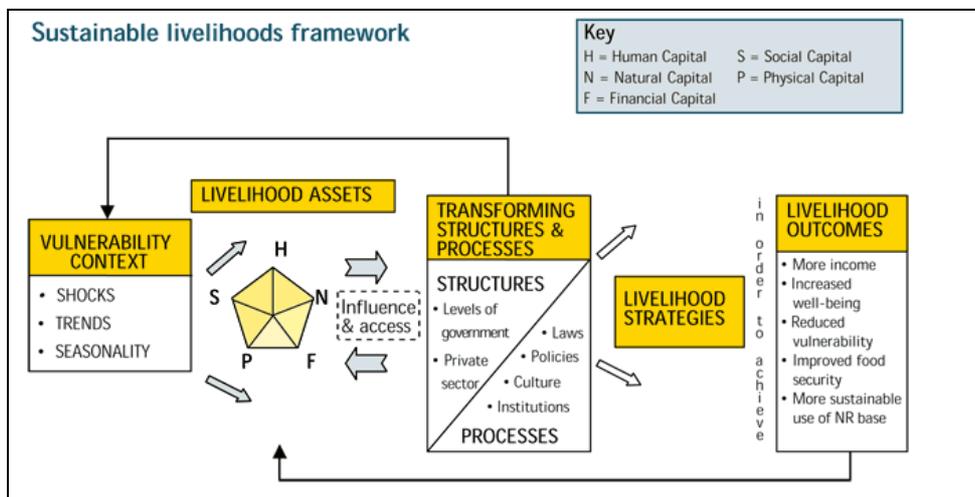


Figure 3.1: The integrated framework of the sustainable livelihoods approach to development. (Source: Practical Action at <http://practicalaction.org/livelihoods-4> accessed on 28th March, 2015).

Such assessment can then be applied in the planning of new developments and in the evaluation of existing developments to see how they contribute to sustaining livelihoods. Thus in developing new highway infrastructure a Sustainable Livelihoods approach would be useful in assessing the actual contribution of the highway towards alleviating poverty and inequality. Though the Sustainable Livelihoods approach is an improvement over modern planning, it does not consider space as multi-faceted with livelihoods or materiality just being one of the conditions required for liveable streets and neighbourhoods. And that is why it is important to consider how people actually adapt road space to their own ends.

Second, studies have shown that the effects of roads and highways are not just one-way: **people, too, affect roads**. The theoretical underpinnings of this view began with the work of Certeau and has continued as evidenced by continuing interest in the performative qualities of space in everyday life such as described in Borden’s writings on movement through urban landscapes (Borden, 2013). Certeau (1984), argues that common people are often targeted by producers, professionals and owners of industrial goods, design, urbanism, information, communication and so forth, as hapless end users

without a say in the way that products are used, consumed or interpreted. He perceives this as an enduring marginality that has spread through various societies (no doubt within a globalised world). His take (Certeau, 1984: xvii)—in diametric contrast to those who perceive marginality in space as limited to the urban poor—is that:

“Marginality (...), this cultural activity of the non-producer of culture, an activity that (...) remains the only one possible for all those who nevertheless buy and pay for the showy products through which a productivist economy articulates itself. Marginality is becoming universal. A marginal group has now become a silent majority.”

Certeau (1984) and Borden (1996) both assert that people are never just docile consumers of products and services; they interpret and associate with whatever representations or images are presented to them with reference to their own beliefs and experiences. They then fill those representations with their own meaning(s) thus remaking them. Certeau differentiates the processes of production as are carried out by professionals and industries from the processes of remaking as is done by ‘consumers’ as **a difference of strategies and tactics**. He (Certeau, 1984: xix) defines strategies as,

“the calculus of force-relationships which becomes possible when a subject of will and power (a proprietor, an enterprise, a city, a scientific institution) can be isolated from an “environment.” A strategy assumes a place that can be circumscribed as proper (propre) and thus serve as the basis for generating relations with an exterior distinct from it (competitors, adversaries, “clienteles,” “targets,” or objects of research).”

Strategies, then, describe the rational decisions and processes by which political, economic and scientific institutions have come to operate and/or dominate a wide range of discourses. Tactics, on the other hand, are opportunistic and always involve negotiation because they operate in a space that is contested. Certeau (1984: xix) describes a tactic as,

“(...) [a] calculus which cannot count on a “proper” (a spatial or institutional localization), nor thus on a borderline distinguishing the other as a visible totality. The place of a tactic belongs to the other. A tactic insinuates itself into the other’s place, fragmentarily, without taking it over in its entirety, without being able to keep it at a distance. It has at its disposal no base where it can capitalize on its advantages. (...) Because it does not have a place a tactic depends on time—it is always on the watch for opportunities that must be seized “on the wing. It must constantly manipulate evens in order to turn them into “opportunities.” The weak must continually turn to their own ends forces alien to them.”

This bifurcation suggest that everyday life is overwhelmingly characterised by tactics rather than strategies. Quotidian practices and social rituals such as walking along a promenade, reading, shopping, choosing between routes, the carrying out of household chores and so forth are tactical in character. Also spur of the moment decisions and

states of mind such as choosing routes, being street smart, discovering things and experiences, escaping from situations and so forth are also tactical. From this argument, therefore, it seems preposterous to impose “strategies” on “targets.” Elites or those in power may determine the form and materiality of products and services. They may conventionally be accustomed to expect that consumers will invariably accept their products, spaces and services as presented to them and use them as hoped. But this often does not work out as planned. In fact, users, in their production of utilisation, may reveal remarkable differences from those premised in the manufacturer’s production of image. It is, therefore, only a study of the magnitude of such discrepancies that the product can be representatively judged as representation and adaptation. This assertion, consequently, presents a fundamental dilemma of production. It is often difficult for producers to take into account the influence of consumers of their products because tactics often comprise, “(...) [activities] that [are] unsigned, unreadable and unsymbolized” (Certeau, 1984: xvii). It is a particularly critique of the usefulness of technocratic approaches in solving pragmatic problems and predicting user behaviour (which producers resort to in an oversimplification of production and consumption). Using the analogies of “writing”, “reading” and “language,” Certeau (1984: xviii) argues that such approaches are precisely unhelpful because,

“In the technocratically constructed, written and functionalised space in which consumers move about, their trajectories form unforeseeable sentences, partly readable paths across a space. Although they are composed within the vocabularies of established languages and although they remain subordinated to the prescribed syntactical forms the trajectories trace out the ruses of other interests and desires that are neither determined nor captured by the systems in which they develop.”

From this perspective statistical data and the kind of interpretation it generates are effectively reductionist because they fail to grasp the forms of practices and the discursiveness of the elements that combine the elements used in consumptive space. In order to understand consumptive space, it is important to know how consumers interpret space and to understand the forms of the choices that they make in mental as well as physical space. Certeau (1984: xx) ponders over a cultural point of departure in this analysis and likens everyday practices to the practice of reading when he opines that:

“To describe (...) everyday practices that produce without capitalizing, (...) one starting point seem(s) inevitable because it is the “exorbitant” focus of contemporary culture: reading. (...) The economy itself, transformed into a “semeiocracy” encourages a hypertrophic development of reading. Thus, for the binary set production-consumption, one would substitute its more general equivalent: writing-reading.”

But how would such reading be done in order to understand consumptive space? How does the suggested reading from the perspective of “tactics” differ from the professional planning perspective of reading from “strategies?” We can derive answers from

Certeau's (1984) discussion of his experience of New York and from Iain Borden's description of urban narratives in London (Borden, 1996). Their punch line is that a reading of the maps of a city made by cartographers and planners is different from a reading of the city by the street user. From the totalising perspective of maps, from a panoptic reading of the whole of New York—or for that matter any other city—it is impossible to comprehend the sensory experience of numerous inhabitants of the streets upon which their decisions are made and their spaces appropriated for their needs. The map is but a “theoretical” simulacrum; a “*misunderstanding of practices*” (Certeau, 1984: 93). The map—a visual representation of the city from far above the life on the streets, offers no understanding or real vision on how space is used. Therefore the users—those quotidian readers of space, are separated and disenfranchised by the producers—the city planner and cartographer, the writers of space. The answer to this disconnect lies, then, in studies of what Certeau calls “practices”; studies of those everyday happenings that, though by evading or even infiltrating through the panoptic view of planners and city authorities may seem illegitimate, constitute an inescapable vestige of urbanity.

But why would a study of everyday life be relevant and useful in shifting the paradigm of a technocratic system defined by the entrenched and often dismissive Panopticon? Lefebvre (1991a: 14) describes what studies of the facets of everyday life portend for the understanding of a society and its relations and how this might possibly humanise planning:

“(...) we need to think about what is happening around us, within us, each and everyday. We live on familiar terms with people in our own family, our own milieu, our own class. This constant impression of familiarity makes us think that we know them, that their outlines are defined for us, and that they see themselves as having those same outlines. We define them and we judge them. We can identify with them or exclude them from our world. But the familiar is not the necessarily known.”

3.11 CONSTRUCTING TRANSDISCIPLINARY DISCOURSE

It is clear that road transportation infrastructure problems are contested, multifaceted and require the collaboration of diverse fields of specialisation. Unravelling the theoretical perspectives of infrastructure in the Global South as done in this section serves to express the sheer enormity and complexity of these infrastructure problems. However, it is just as important to see if any logical relationships exist between these perspectives and how, then, a broader lens may be selected by which to view road transportation infrastructure problems. This broader lens, in actual sense a conceptual framework, would be construed as a matrix that promotes understanding since the

primary question here is how it may be possible to express the plethora of road transportation infrastructure problems in ways that may be understood by diverse fields. At first glance the disciplinary theoretical perspectives presented may seem at variance with each other, each claiming a limited space and acting upon the problems it sees with its limited repertoire of tools. However, the evolution of a conceptual framework, defines broad areas of discussion which act as filters through which intellectual discourse may be channelled for purpose of transdisciplinary collaboration. From the discussion of theoretical perspectives in chapter 3, it is apparent that three broad categories of discussion (see figure 3.2) exist among the fields that attempt to tackle road transportation infrastructure problems in the Global South. These three broad categories are:

(1) those that attempt to explain the **inputs** that should go into road transportation infrastructure. In this case road transportation infrastructure is taken as an inescapable facet of modern life; that the act of improving the quality of highways naturally subsumes improving the human condition. The primary problem with road transportation infrastructure in such discussions is defined as technical and fiscal. It entails how to deliver roads faster, cheaper and safer and how to evolve specifications and legislation suitable for the co-existence of those modes of mobility impinging on road space, but particularly, the car. Science, technology and neoliberal economics are its fundamental tools and its modus operandi is panoptic. The intellectual perspectives driven by transportation planning, civil engineering, mobilities theory and road infrastructure economics belong to this class of debate,

(2) those that attempt to explain the **context** in which infrastructure is built. These debates often confront the problem of infrastructure by invoking the environmental qualities wrought by road transportation infrastructure. The import of infrastructure becomes questionable as it is judged both as creation and creator of the urban environment: road transportation infrastructure from its initial construction forges certain urban patterns that over time congeal existing social structures. These social structures then, by production and reproduction, reinforce the form and pattern of road transportation infrastructure. Road transportation infrastructure, then, is considered a relationship between mankind and the environment. The operation of these perspectives is long-term and dialectical. Landscape urbanism, ecological urbanism and cognate fields fit into this class of debate, and,

(3) those that attempt to explain the **effects** of infrastructure. In this case the importance of infrastructure is a subject of its impacts on man as a social animal. The primary questions in these debate concern relations of social class, particularly how inclusive road transportation infrastructure is and what potentials it offers to the road user regardless of their social background. The existence of roads and their effects are taken

as the origin of debate on the human condition. The answers may not be precise, but the questions raised are just as important as those raised by other classes of debate. The operation of these schools of thought is cyclical. Spatial justice, politics and governance, context-sensitive design, and everyday life belong to this category of debate.

The relationships between these three categories and their approaches to road transportation infrastructure problems in the Global South can be described both by their immanent outlook and by their engagement in practice and intellectual discourse.

Fields such as engineering and economics, with their formal traditions and their penchant for practical action, employ probative and prescriptive methods towards road transportation infrastructure problems in the Global South (in their present form). Their engagement in discourse and practice is definitive and normative; a vestige of the modern age (Dear, 2000). Spretnak (1997) describes the ubiquitous axioms of the modern age as:

(i) Humans are considered primarily as economic beings. Therefore the prioritisation of economic endeavours connotes contentment in every other sphere of life. In the material search for well-being, evolution is assumed to be unidirectional, that is, the human condition progresses toward increasingly better states as the past is continuously reviewed and made better.

(ii) Ontological and epistemological worldviews are defined by (a) objectivism—the belief that reality has a rational structure which can be uncovered by reason. (b) rationalism—a resort to reason as the exclusive grounds for knowledge and action, particularly 'pure reason', the reason that is unclouded by emotions, senses or social constructs. (c) a mechanistic world view of the world as comprising matter and energy that are subject to the laws of causality. (d) reductionism, a bias toward understanding the smallest unit of composition in a given system, and (e) scientism, the belief that all fields of inquiry can gain objective knowledge via scientific methods of investigation.

(iii) The design and organisation of work are founded on the principles of standardisation, bureaucratisation, and hierarchy.

(iv) Interactions with nature are anthropocentric and guided by instrumental reasoning—reasoning that is directed towards ends or 'successful' actions. Modern culture defines itself in opposition to nature through its dominance over natural forces and is contemptuous of non-modern cultures that do not share these dispositions (Dear, 2000).

(v) Life is extremely compartmentalised so that its spheres: family life, work, spiritual life and so forth, are discrete. A social Darwinist view of life as a competitive struggle establishes antagonistic relations among the spheres of life. Consequently, even the

discrete spheres of life are characterised as 'hypermasculine' (emphasising on rationality and dominance) rather than feminine (displaying emotions such as empathy).

Theories ensconced in-between latter-day fields such as landscape urbanism and continuing debates on urban planning, particularly urban morphology and urban structure display descriptive and reflexive approaches towards road transportation infrastructure problems in the Global South. They are relatively more accepting of uncertainty and complexity. Their engagement in discourse and outlook is both analytic and experimental.

The last category of discussion is one based on the presentation of pressing **Urban Realities**. Its outlook is dialectic and interrogative. Its basis is the human condition which, according to its proponents, is a rich subject of scrutiny that extends beyond the constraining confines of professions and the theories they generate. The perspectives espoused in these debates are intricately linked by the nature of infrastructure as a product of, in and affecting, the environment. It is practically necessary, for instance, to include the specific local conditions (geological structure, user behaviour, existing modes of transport, traffic demand and so forth) when considering the safest, fastest and cheapest technical specifications for the planning and design of road transportation infrastructure.

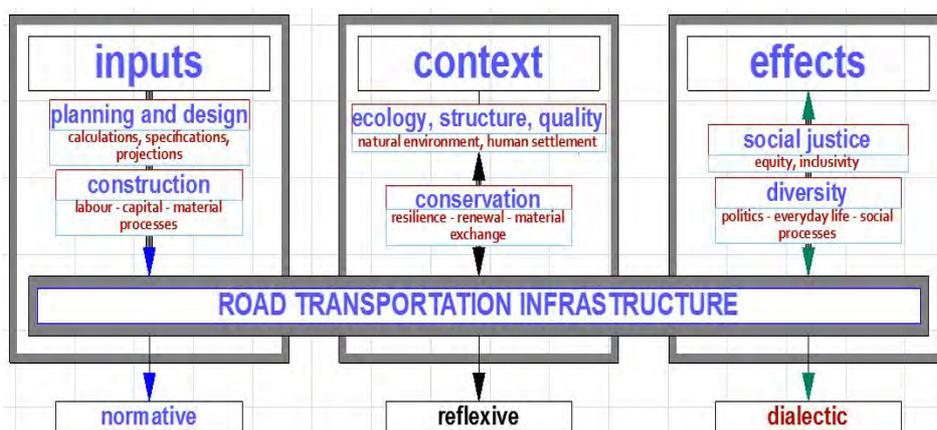


Figure 3.2: Categories and relations of scholarly debates on infrastructure in the Global South. (Source: Author)

Similarly, it is not possible to isolate the effects of road transportation from the context in which it is constructed because it is within this context that its primary effects are experienced. Context-sensitive design, though in its present engineering-related form often leaves out governance, is about taking consideration of the existing context as it is about the politics, urban realities and effects of intended design. So, though the perceptions intellectually lodged in the three categories go on to prescribe appropriate

solutions for road transportation infrastructure in the Global South generated from the intradisciplinary tools at their disposal, it is an inadequate approach. The difficulty in discretely defining the perspectives of road transportation infrastructure in the Global South makes it clear that the issues that define large transportation infrastructure projects are practically imbricated and demand a more integrated approach. The conceptual framework in the next section expresses this gap.

3.12 CONCEPTUAL FRAMEWORK

It is deducible from the disciplinary perspectives that the degree of public participation and care for the public good exhibited in the articulation of road transportation infrastructure in urban space is closely related to political hegemony. The influence of politicians on planning professionals as well as the hierarchy of decision-making institutions and their operational processes is undeniable. Politics is the primary determinant of the enframing of road transportation infrastructure in the Global South.

The discussion of different perspectives as presented herein is deliberate. Its intention is to unravel the underlying complexity of relationships (or lack thereof) among critical debates about the enframing of road transportation infrastructure. But the realities of the transportation planning process and the manner in which projects are reified are complicated, shrouded in mystery, and, an often opaque process. It is impossible, for instance, to practically delink or completely demystify the influence of African Big Men in politics and governance from the process and product of transportation planning because in postcolonial Kenya the planning technocrats are, “*middle-level functionaries who provide key legitimising [strategies] for the rule of the state* (Myers, 2003). And it is also rather axiomatic that the product of road transportation infrastructure exerts influence on the reframing of road space. Figure 3.3 is a summary of the relationship between prevailing scholarly perspectives. In the next chapter I discuss how, with consideration to the diverse relationships and hegemonic structures defining the relationships of the perspectives I have discussed, road infrastructure projects have structurally enframed and continue to enframe Nairobi’s urban space.

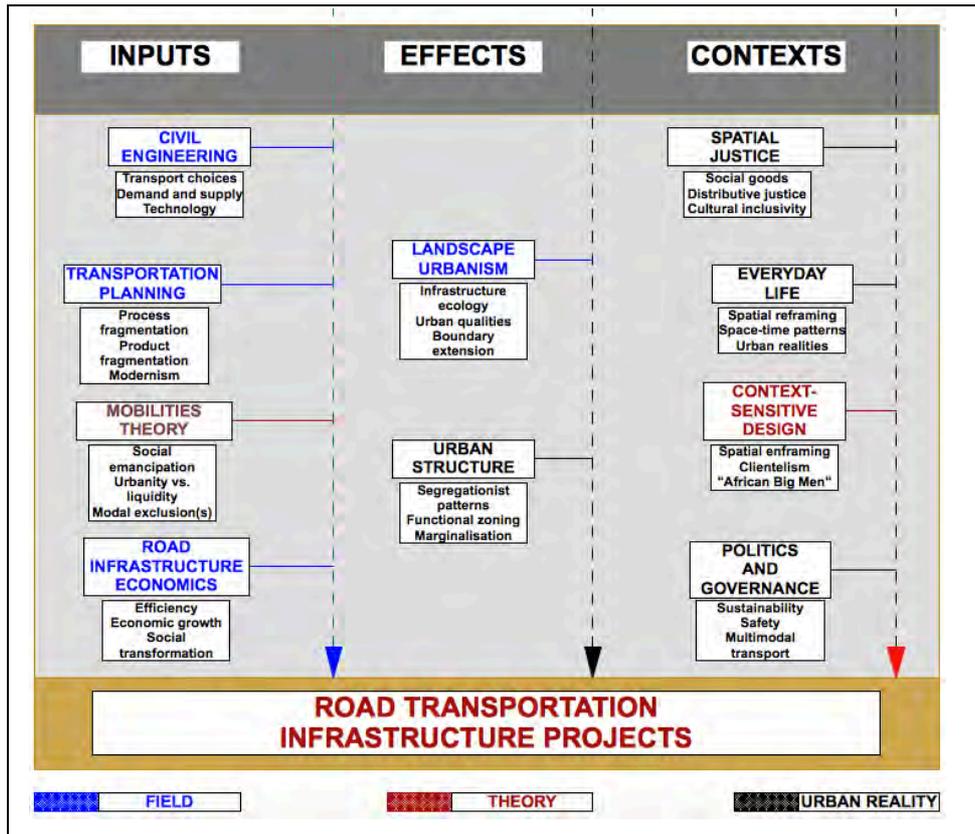


Figure 3.3: The relationship of perspectives of road infrastructure projects in the Global South. These relations are chronologically diverse, including all project periods; before, during and after transformations of road transportation infrastructure. (Source: Author).

Chapter 4

4 THE HIGHWAY: ROAD TRANSPORTATION INFRASTRUCTURE AS A STRATEGY FOR ENFRAMING NAIROBI'S METROPOLITAN SPACE.

4.1 THE SILVER BULLET

“In a young country there should be faith, hope and continuity, and the greatest of these is continuity.” –Robert Thorne Coryndon, Governor; Kenya Colony (1922-1925)

As discussed in chapter three—in the section on road infrastructure economics—transportation infrastructure transformations are often touted by governments in the Global South as the silver bullet for social and economic transformation. This, certainly, is the case in Kenya where the government has been guided by the Kenya Vision 2030 document in pushing a long-term development agenda. This document enunciates the kinds of social and economic transformations expected from the physical transformation of infrastructure. Its ideation, though tinged with a westernised futuristic predisposition complete with the stylised jargon of the modern and post-modern eras, is not new. Many of its precepts have their origins in colonial Kenya and numerous iterations in government documents of previous regimes. These ideas have been unravelled and analysed by scholars in the political sciences with particular interest in the ideological positions and workings of postcolonial governments of Africa including Bach and Gazibo (2012), Hendricks (2010), Meredith (2005) and Myers (2003). The script is as follows: African city forms have continued to exhibit the influence of colonialism in spite of the passage of time (Anyamba, 2006, Myers, 2003). In more than 50 years after independence from colonialism, African governments have had adequate time to remedy the injustices of colonial planning. But regime after regime has chosen continuity rather than change. For example, though Nairobi’s colonial plans were based on segregation of races, all Nairobi’s urban plans so far—including the Nairobi Integrated Urban Development Master Plan (2014)—have been a reinforcement of the original segregationist pattern rather than opportunities to impart real structural change. These plans neither acknowledge diversity nor improve services and utilities to reflect priorities embedded in pressing urban realities. Even the brazen claims in the African Development Bank’s Nairobi-Thika Highway Improvement Project Appraisal Report²⁹ (2007) are just but a diversion from the central issue afflicting transportation planning in Nairobi since colonial times: that transportation infrastructure has always been planned to favour the private car rather than to provide needful mass transit for the urban majority (Emig and Ismail, 1980). That this is the *de facto* issue is proven in scholarly critiques of the implementation of the Thika Highway Improvement Project (such as Teipelke, 2014) and the planning of other highway projects. Particularly salient is the

²⁹ This appraisal report claims that the inadequacy of the Thika Road with regard to traffic volumes and the subsequent proposal for its expansion was supported primarily by the Japan International Cooperation Agency sponsored Nairobi Metropolitan Area Transport Master Plan of 2006 that showed that road transportation infrastructure in Nairobi was generally inadequate.

disregard exhibited towards non-motorised transport³⁰. Further proof of the privileging of the cars can be established in the conceptual link between current road infrastructure expansion projects and the 1973 Plan for a Metropolis (Teipelke, 2014). With consideration to the foregoing arguments this section discusses the ongoing transformation of roads in the city of Nairobi with reference to how, first, it is a culmination of the political aims of the ruling class as contained in Kenya Vision 2030 document and, second, how it structures the city as a representation of the ideals and presumptions of this ruling class. I present the case of the Kenya-Northern Corridor Transport Improvement Project and the Thika Highway Improvement Project to illustrate how these highways determine urban form at the metropolitan scale.

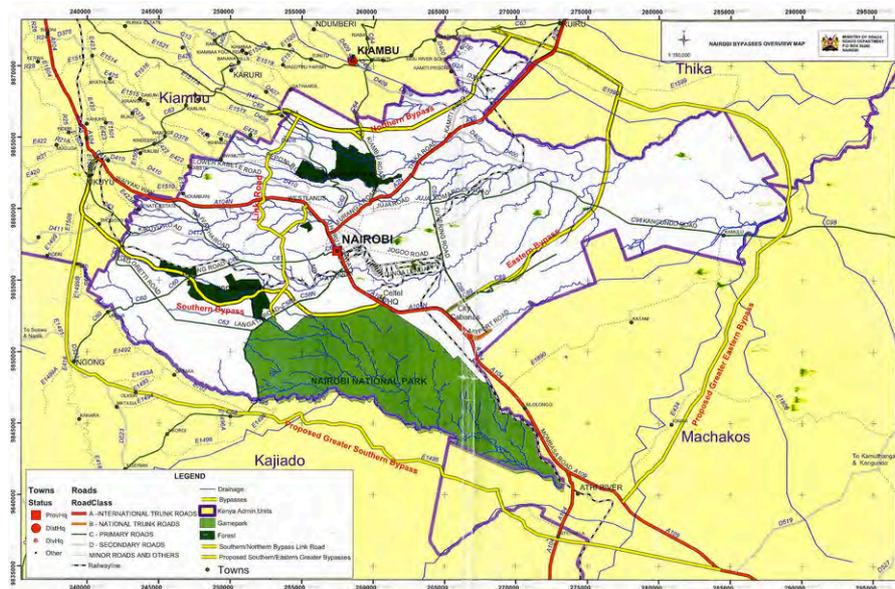
4.2 NAIROBI'S HIGHWAY IMPROVEMENT PROJECTS

The major roads that constitute the highway expansion programme referred to as the Kenya-Northern Corridor Transport Improvement Project form the primary arteries of the city of Nairobi today (see map 4.0). By Kenya's independence in 1963, these major roads existed. But their actual origins can be traced back to the trade routes and the circulation partners existing from the precolonial era. It is the arrival of the British in East Africa, via the British East Africa Company, their expeditions into the hinterland, their building of a railway line from Mombasa and their choice of Nairobi as a railway town that definitively etched the present pattern of Nairobi's roads into its landscape. The structure of the road system in Nairobi today, in fact, is the inevitable result of the alignment of the Uganda Railway. As Myers (2003: 34) notes,

“Colonial administrators planned to develop a settler agricultural economy in the East Africa Protectorate (...) to defray the costs of the Uganda railway and a road running roughly parallel to it.”

It is therefore correct to glean from this vignette that the first major road in Nairobi was the Mombasa Road, a road extending from the port city of Mombasa past Nairobi into the Kenya Highlands—the heart of the East Africa Protectorate's agricultural economy—then onward into Uganda. This pioneer road, and the infrastructural armature that started began about the railway town on the temperate Enkare Nyrobi swampland (Nairobi River swamp) became the structural skeleton upon which the city was laid out (Anyamba, 2006, Emig and Ismail, 1980, Olima, 2001, Smith, 1984).

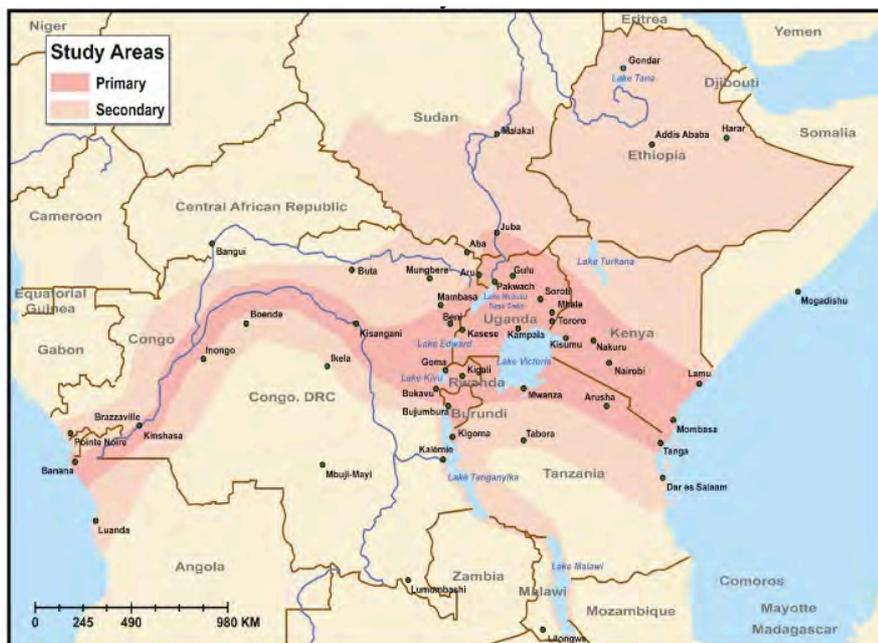
³⁰ See the report entitled the social/community component of the analysis of the Thika Highway Improvement Project, May 2012 at http://csud.ei.columbia.edu/files/2012/11/KARA-report_FINAL.pdf (accessed on 25th April, 2015) and Teipelke, 2014.



Map 4.0: A map of Nairobi's recent road infrastructure transformation projects radiating from the traditional city centre—Thika Road running North East, Mombasa Highway running South East, and, ring roads comprising the Northern, Eastern and Southern Bypasses. (Source: <https://fonnap.wordpress.com/2011/06/13/franklin-bett-minister-of-roads-announces-the-greater-southern-bypass/> (accessed on 24th April, 2015).

4.2.1 Mombasa highway: the northern corridor

Today, the road system between Nairobi and Mombasa exists in its original alignment as the Kenya-Northern Transport Corridor. This transport corridor links the Kenyan port city of Mombasa to the hinterland nations of Uganda, Rwanda, the Democratic Republic of Congo and Burundi (see map 4.1). As a major axis of movement and the cardinal boundary of the city it determines the extents through which the city of Nairobi grows to the West and to the South. As in many other cities of the world there is an enduring bias towards this transport corridor. This bias has been reinforced by the original settlement patterns in alignment primarily with the railway (and the road running roughly parallel to it) and by the progressive deterioration of the Kenya Railways passenger train services since the late 1980s, which increased reliance on roads for everyday transportation. The improvement of the Mombasa Road was incremental, starting first with the expansion of the road from 4 (four) lanes into six (6) lanes from the Haile Selassie Junction to the Jomo Kenyatta International Airport in 2004 and 2005.



Map 4.1: A map of the Northern Transport Corridor (Source: Louis Berger)

Next, between 2007 and 2010, the dual carriageway was extended from the JKIA junction to Athi River with an interchange at Athi River constructed where the Athi River-Namanga-Arusha Road intersects the Mombasa Road. This project was part of the Northern Corridor Project from Mombasa to Nairobi funded by the International Development Association of the World Bank. According to project tender documents issued by, the then, Ministry of Roads, the entire project was an 86-kilometre highway from Sultan Hamud to Embakasi³¹. The specific stretch from the JKIA Junction to the Machakos Turnoff Road (A104/A109) constituted a portion of 33 kilometres of a single carriageway from the Machakos Turnoff Road to Athi River and a dual carriageway from Athi River to the JKIA. It included the construction of interchanges at Athi River and at the JKIA Junction. The rehabilitated pavement structure was made of layers: sub-base of 175 mm GCS (0/30), base of 150 mm DBM (0/30), super-pave AC 50 mm and a single seal. The entire contract was for 30 months and the contract sum 93.5 million Euro (Nicholas O'Dwyer) or 4.2 billion Kenya shillings (Ministry of Roads). The contractor was SBI International Holdings AG from Switzerland and the supervising

³¹ The project details for the Northern Corridor can be found at <http://www.nodwyer.com/projects> (accessed on 13th May, 2013).

(engineering) consultant were Nicholas O'Dwyer International of Ireland in collaboration with Abdul Mullick Associates, an engineering firm registered in Kenya.

Since 2012 there have been sporadic reports in the newspapers³² of further transformations of the Mombasa Highway and the Uhuru Highway. These reports suggest that the proposed expansion(s) of these highways comprise the addition of 2 (two) lanes from the Jomo Kenyatta International Airport up to Rironi, the construction of a 4 (four) lane viaduct (see figure 4.0) from the intersection of Mombasa Highway with Haile Selassie Avenue up to the University Way intersection and the extension of the dual carriageway to the Makutano Junction (Machakos Road Turnoff) and eventually all the way to the port city of Mombasa.

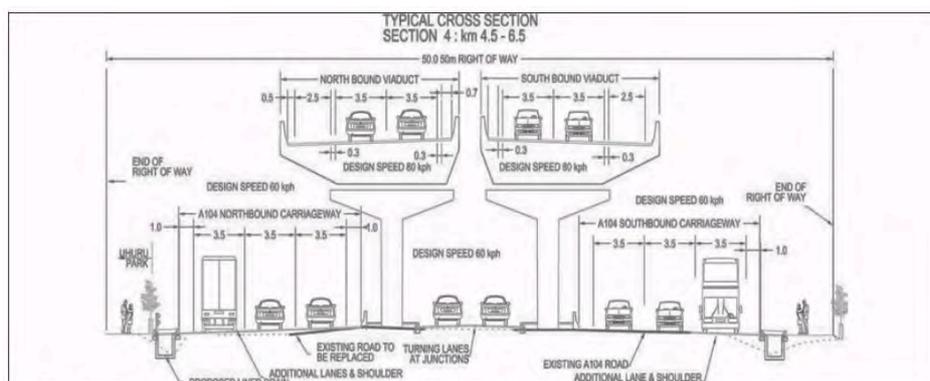


Figure 4.0: A section of the proposed viaduct on Mombasa Highway from the Nyayo Stadium roundabout to Waiyaki Way. (Source: KenHA)

These proposals, designed by COWI A/S of Denmark, are yet to be implemented though, according to the aforementioned newspaper reports, the agreements to carry out these expansions have been signed by the Government of Kenya and the World Bank.

4.2.2 *The Thika Superhighway: the northern corridor*

The Thika Highway—which still connects into Nairobi primarily through Murang'a Road (formerly Fort Hall Road)—was first seen as a major road in the 1948 Plan for a Colonial Capital. Later, in the 1973 Plan for a Metropolis, its expansion into a highway of between 10 lanes and 18 lanes was proposed. This first proposal for its expansion into a highway was linked to the ease of access to the capital that such an expansion would facilitate for the bourgeoisie (interestingly the zenith of the modern movement in

32 See, for example, this report in the Daily Nation of 12th September 2013 online edition: <http://mobile.nation.co.ke/news/Nairobi-first-double-decker-highway-will-be-over-in-4-years-/1950946/1990720/-/format/xhtml/item/1/-/r2pu7mz/-/index.html> (accessed on 12th February, 2015).

planning fell within that period) rather than to the urban majority's commuting needs (Emig and Ismail, 1980). Today, the most celebrated (and vilified) highway project in Nairobi is the Thika Superhighway. This is because it is not only the most expensive realised road infrastructure project yet³³ at Ksh. 31 billion, but caused the most disruption to peoples lives and is the most radically transformed road. It's construction, unlike the project(s) of the expansion of Mombasa Road, was climaxed by a grand presidential opening (Teipelke, 2014)³⁴.



Plate 4.0 (left) and 4.1 (right): Pictures taken at the same location showing the transformation of the Thika Highway from 2002 (left) to 2013 (right) (Source: Nation Media Group and skyscrapercity.com)

The presidential speech at the opening was full of platitudes about the diligence and achievements of the team involved in its design and projected that the road would transform the country in many positive ways (see plate 4.0 and 4.1 and Appendix A). It was also peppered with stabs at intractable Kenyan road users about how to behave whilst on the costly “superhighway” and admonitions to poor roadside communities not to pilfer metals (for sale to scrap dealers or for the making of household items) from the guardrails, and road signs. The most interesting remark in the speech, though, concerns how the Thika Superhighway project was mooted after a conversation the then President of Kenya, Mwai Kibaki, had with Mr. Donald Kaberuka, the president of the African Development Bank (AfDB). In other words, the president of the African Development Bank directly lobbied the president of Kenya to identify an infrastructure project so that the AfDB would lend money to Kenya for the project. The project was thus driven by a top-down neo liberal political ideology. And with the AfDB's strategy for development assistance to African countries in the period 2003-2012 particularly

³³ The ongoing Standard Gauge Railway (SGR) Project is to be the most expensive project at Ksh. 323 billion. For this see: <http://mobile.nation.co.ke/news/East-Africa-China-Standard-Gauge-Railway/-/1950946/2310836/-/format/xhtml/-/12mcyetz/-/index.html> (accessed on 26th April, 2015).

³⁴ See <http://www.constructionkenya.com/2783/thika-superhighway-officially-opened/> (accessed on 18th June, 2014).

focused on prioritising public and private investment in infrastructure³⁵, the project identified was the Thika Superhighway. The design of the superhighway was done between 2006 and 2008 by an Indian firm, Consulting Engineering Services (CES) Pvt. Limited and APEC Consortium Limited, an engineering firm registered in Kenya. The contract for its improvement was divided into three lots (see map 4.2):

Lot 1 comprised three city arterial connectors; (i) Connector 1 from Museum Hill Interchange through Forest Road to Muthaiga. Works involved the widening of Forest Road from 4 (four) lanes to 6 (six) lanes, the widening of the Museum Hill Road from 2 (two) lanes to 6 (six) lanes and the provision of an overpass at the Limuru Road intersection. (ii) Connector 2 from University Way, through Pangani to Muthaiga. Works entailed the widening of University Way to eight lanes from six, the construction of a 4 (four) lane overpass across the Globe Cinema Roundabout, the widening of Murang'a Road to 6 (six) lanes, an underpass, an overpass and a footbridge at Pangani and an interchange at Muthaiga to replace the existing Muthaiga Roundabout. (iii) Connector 3 from the Uhuru Highway/Haile Selassie Avenue intersection to Racecourse Road and Ring Road Ngara then to the Pangani overpass.



Map 4.2: The Thika Highway Improvement Project (THIP) showing transformations (Source: Survey of Kenya)

³⁵ The strategies of the AfDB are contained in the document, Building Africa's Development Bank: six recommendations for the AfDB and its shareholders. See http://www.cgdev.org/files/10033_file_AfDB_ENG.pdf (accessed on 25th April, 2015). The largest proportion (60%) of investment made the African Development Bank in Kenya is in physical infrastructure with transportation accounting for 41% and energy accounting for 19%.

Lot 2 was the Muthaiga roundabout to Kenyatta University section that was designed as an expressway with limited access and exits. Works on this section comprised the widening of carriageway to 8 (eight) lanes between Muthaiga and Kasarani and 6 (six) lanes from Kasarani to the Kenyatta University. Service roads were also provided on either side of the expressway.

Lot 3 This section of highway was located between the Kenyatta University and Thika town. Works included widening the carriageway to 6 (six) lanes from the Kenyatta University up to Juja Town, the maintenance of the existing provision for service roads, the construction of overpasses at the Ruiru for the Eastern Bypass, at the Kiganjo Road Turnoff and at the Kenyatta Road Turnoff.

The project also comprised the construction of service roads, the construction of underpasses at the former GSU roundabout and at Ruaraka, overpasses at Roysambu and Githurai roundabouts, and at the Survey of Kenya. After residents complained of an increase in the incidence of accidents involving pedestrians 18 footbridges accessible on both sides of the highway via staircases and ramps were provided, some at intersections and others at isolated places. The footbridges were spaced at distances as far as two kilometres, along the highway (Teipelke, 2014). For purposes of wayfinding and road safety, gantry road signs, flexi-beam guardrails, road markings and streetlights. The Thika Highway also included the provision of cycle tracks and footpaths. The particulars for these were as covered in the following schedule³⁶:

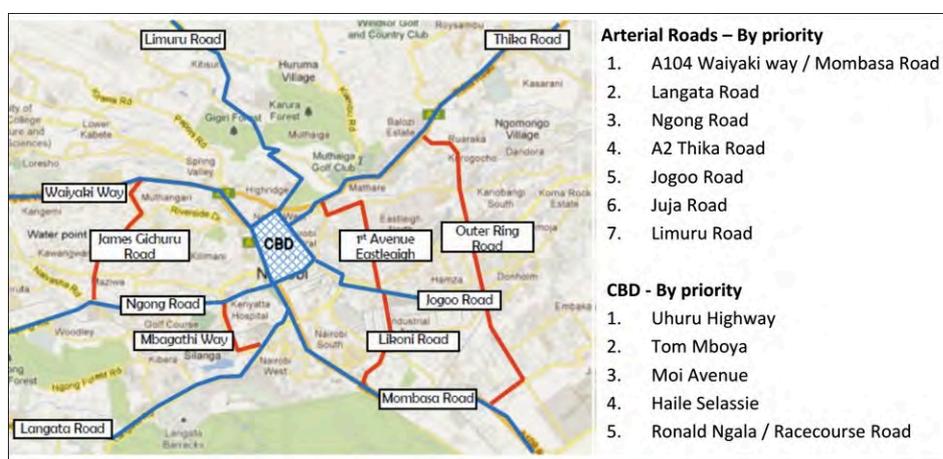
- (1) Juja-Thika: 2 lanes dual carriageway including service roads, cycle tracks and footpaths.
- (2) Kasarani-Juja: 3 lanes dual carriageway including service roads, cycle tracks and footpaths.
- (3) Muthaiga-Kasarani: 4 lanes dual carriageway including service roads, cycle tracks and footpaths.
- (4) Pangani-Muthaiga: 4 lanes dual carriageway including cycle tracks and footpaths.
- (5) Museum Hill-Pangani: 3 lanes dual carriageway.
- (6) Ring Road Ngara-Kariakor-Pangani: 2 lane carriageway.

The project was financed by the Government of Kenya, the AfDB and Exim Bank of China.

³⁶ For an overview of the components of the Thika Superhighway refer to the final report on the social/community component of the analysis of the Thika Highway Improvement Project at http://csud.ei.columbia.edu/files/2012/11/KARA-report_FINAL.pdf (accessed on 25th April, 2015).

4.2.3 The bypasses

One common statement in both the report commissioned by Japan International Cooperation Agency (JICA) in 2006 of the study on the Master Plan for Urban Transport in the Nairobi Metropolitan Area (Katahira & Engineers International, 2006) and the final report of May 2014 of *The Project on Integrated Urban Development Master Plan for the City of Nairobi in the Republic of Kenya* (Nippon Koei Company Limited et al., 2014) detailing road traffic conditions in Nairobi was that congestion occurs—and is expected to get severe in future—because of the convergence of major road transport routes in central Nairobi (see map 4.3). The highway and street pattern is radial such that traffic generated in the Nairobi Metropolitan Region and the contiguous peri-urban area, including through traffic, must pass through or near central Nairobi. The bypasses, then, were constructed essentially as a series of connected ring roads as a solution for directing through traffic around the city rather than through or near the city centre.



Map 4.3: A map of Nairobi showing the existing radial pattern of roads and highways. (Source: Report of the taskforce on the decongestion of the City of Nairobi, 7th April, 2015)

The 39 kilometres long Eastern Bypass, that was first to be completed (in 2011), is a two-lane single carriageway highway that starts 4.3 kilometres away from Ruiru on the Ruiru-Kamiti Road. It intersects the Northern Bypass at Membley Estate, overpasses the Nairobi-Nanyuki Railway then crosses under the Thika Superhighway before the new Kamwaki Township. After the Thika Superhighway, it transcends the Kamiti River, the Gathara-ini River and Nairobi Rivers into Ruai Town. The Eastern Bypass then overpasses Kangundo Road and proceeds to Mombasa Road via North Airport Road. It serves traffic from central and northern Kenya passing through the Thika Superhighway to connect to the Mombasa Highway without passing through central Nairobi. It also

serves traffic from Mombasa and Nairobi's industrial area to connect to Thika Superhighway without having to pass through central Nairobi.

The 31 kilometres long Northern bypass is a two-lane single carriageway highway. It starts at Ruaka trading centre along Limuru Road, then overpasses Banana Road through Runda and Thome estates. It then proceeds to Kahawa West and eventually to Ruiru, through Kamae, where it joins the Eastern bypass. The Northern Bypass and the Eastern Bypass were together estimated to cost 8.5 billion Kenya shillings. Kenya financed 15 per cent of the project (Sh1.2 billion) while the China, through the Exim Bank of China, financed the remaining 85 per cent (Sh7.3 billion). The Northern Bypass connects traffic from the Thika Superhighway and the Eastern Bypass to the Nairobi-Nakuru Highway at Limuru while avoiding central Nairobi. It also connects traffic from central and western Kenya to the Thika Superhighway and the Mombasa Highway without passing through the central city.

The 28.6 kilometres long Southern Bypass with 12 kilometres of slip roads and 8.5 kilometres of service roads³⁷ starts at the Ole Sereni Hotel on Mombasa Highway. It runs along the Nairobi National Park fence then passes under the Lang'ata Road on its way past Kikuyu Town to join the Nairobi-Nakuru Highway at Rironi near Limuru. The road was estimated to cost 17.5 billion Kenya shillings with 85% to be funded by the Exim Bank of China and 15% to be funded by the Government of Kenya. Its purpose is to extract the trucks going into the hinterland via Mombasa Highway from the traffic volume entering central Nairobi. The Southern Bypass project has been the most controversial because it passes through the northern fence of the Nairobi National Park. In June 2012 the project met stiff opposition from an NGO called the Friends of Nairobi National Park (FoNNP), that successfully petitioned the National Environmental Tribunal (NET) of Kenya for a moratorium on the project construction claiming that the project endangered the flora and fauna in the park and would set a precedent for environmental destruction. Eventually the issue was resolved and the project proceeded.

³⁷ This distance is confirmed in the article at <http://www.constructionkenya.com/2926/nairobi-southern-bypass-progress/> (accessed on 2nd February, 2015).

4.3 NAIROBI'S HIGHWAY INFRASTRUCTURE-RELATED PHYSICAL AND STRUCTURAL TRANSFORMATIONS

In the process of the implementation of the highway transportation improvement projects, there were varying structural changes to the corpus of buildings along them and to certain land uses. First, restrictions of access to the highway led to the mass dislodgement of commercial function along Murang'a Road—the primary entrance into the city from the new Thika Superhighway. Before the transformations were carried out, the neighbourhood was a bustling mixed use district with housing of various typologies, corner shops, car garages, bars, guest houses, restaurants, filling stations, churches, two temples, clinics, second-hand car dealerships, schools and a private hospital: the Guru Nanak Hospital. Before the implementation of the highway transportation improvement project along Murang'a Road there were designated and undesignated bus stops usually close to filling stations. These transit stops were the locus of economic activity and the key points for comprehending and finding places in the neighbourhood. After access to the road was restricted, activities dependent on traffic access into the neighbourhood ceased, roadside businesses closed down and the area effectively became a dormitory district located just 2 kilometres from the central business district (see plate 4.2). Everyday life was deprecated at the altar of economic hypothesis and engineering might.



Plate 4.2: A stretch along Murang'a Road showing an abandoned filling station after access was restricted by a kerb after the transformation of the highway. (Source: Author)

Second, landscape features adjacent to the highways changed to reflect the configuration of the road. Along Mombasa Road and the Eastern Bypass, industrial and

commercial buildings have mushroomed along the highway and the hitherto natural topography has been altered in these areas so that trucks and other heavy commercial vehicles can access the warehouse adjacent to the road (see plate 4.3). This altering of the landscape on a large scale (20 acres or more) is most evident in the 7 kilometres stretch of the Eastern Bypass flanking the Kangundo Road intersection which has become an extension of the industrial area adjacent to the Jomo Kenyatta International Airport (JKIA). Landscape that was previously lower than the level of the road is being raised across relatively larger industrial sites and that which was higher than the level of the road is excavated on the same scale. In contrast to this, residential and commercial buildings along the highway conform to the existing landscape.

Third, the transformation of highways correlates with a rise in speculation on land and higher land and housing prices. Land speculation is couched in the term “land banking” often used by companies such as Land Layby Kenya Limited which specialises in buying land in the outskirts of cities “in the pathway of development.” Kanyangi (2010), Njau (2010), Ndoria (2011), and, Teipelke (2014), reveal how prices of land and prices of the new housing estates under construction have risen dramatically in Nairobi, especially along



Plate 4.3: Alteration of the natural landscape to conform to the profile of the highway on industrial lands flanking Kangundo Road along the Eastern Bypass. (Source: Author)

transformed highways. This has the effect of pushing affordable housing and, consequently, its tenants outside the official administrative boundaries of the city to unserviced land at the periphery. This displacement of affordable housing from more

centrally located neighbourhoods towards the periphery of the Nairobi Metropolitan Region is evidenced by the Hass Land Price Index 2015, which indicates that since the transportation improvement projects began in 2007, the price of land in the central neighbourhoods has risen by as much as 535%³⁸. Simultaneously, the juxtaposition between existing affluent neighbourhoods and poor neighbourhood tenements or high-rise slums has been sharpened by the development of large glitzy shopping malls on land adjacent to the transformed highways. The Thika Road Mall and its immediate neighbourhood is, perhaps, the apotheosis of this contrast.



Plate 4.4: An advert of a land buying company encouraging the purchase of land within the Nairobi Metropolitan Region for purposes of speculation. (Source: Land Layby Limited)

The interior architecture of this mall is consumerist kitsch and insular, closing in the outlets of multinational consumer brands while simultaneously closing off the view outward from it to the visual chaos of informal tenements surrounding them. Only the façade of the mall fronting the highway betrays its functions and its trappings of mass consumption (see plate 4.5). The highway around it is designed elaborately for access into it by car while the residential area around is served by all-weather roads, a contrast calling into question the premise that highway transformations serve public equitably or promote economic growth across social classes. Graham and Marvin (2001: 5) generally contend—about this type of urbanism on a global scale—that,

“(...) through such trends the physical fabric of many cities (...) is starting to fragment into giant cellular clusters—packaged landscapes made up of customised and carefully protected corporate, consumption, research, transit, exchange, domestic and even health-care spaces. Each tends to orient towards highway grids (...) whilst CCTV and security guard-protected ‘public private spaces’ mediate their relationships with the immediate environments. Thus they tend to turn their backs on traditional street fronts

38 The Hass Land Price Index is an annual analysis by the company Hassconsult Limited of the growth of the property market in Kenya. The report referred to here was published at <http://www.businessdailyafrica.com/Upper-Hill-land-most-costly-as-prices-in-Nairobi-up-535pc/-/539552/2606680/-/ta4gji/-/index.html> (accessed on 12th May, 2015).

and the wider urban fabric, carefully filtering those 'undesirable' users deemed not to warrant access for work, play, leisure, residence or travel."

The present development of such shopping mall architecture in Nairobi, however, is one where contrasts are reinforced in a city beleaguered by the gross inequalities rooted in Kenya's colonial era.

Rabid speculation on land correlates not just with the recently implemented road transportation improvement projects in Nairobi but also with reported official government plans of constructing what are referred to as the Greater Nairobi bypasses; that is the Greater Eastern Bypass and the Greater Southern Bypass.



Plate 4.5: The façade of the Thika Road Mall facing the Thika Superhighway. Abutting the other faces of the mall are high-rise residential tenement buildings in an informal settlement from which the mall is insulated by 3-metres high fences, a deliberate lack of openings and the service zones. The roof of the mall, from which the informal highrise apartments around the mall would be visible, serves as car parking thus completing the "hermetic seal." (Source: www.trm.co.ke; accessed on 21st May, 2015)

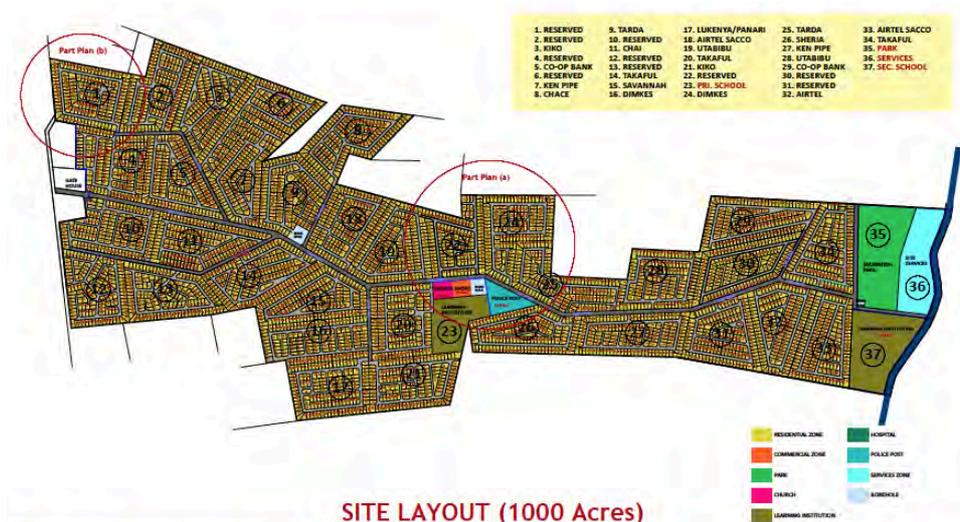
Evidence suggests that these reports have prompted real estate developers, cooperatives, land-buying companies and wealthy individuals to buy large chunks of land outside the administrative city boundaries in areas such as Kamulu, Kilimambogo, Konza, Athi River, Isinya and Kitengela (Nkedianye et al., 2009). Land surveyors are then commissioned to subdivide the large land parcels into one eighth-acre residential plots and market it to prospective clients as investment that is attractive for speculation. Supposedly, proposed roads and "fast urban growth" will open up them up for real

estate development consequently raising land values⁴⁰ (Teipelke, 2014). Due to this type of speculative land trade the processes of planning and design of neighbourhoods in the Nairobi Metropolitan Region have been subjugated to land subdivision. Evidence further suggests that, in Nairobi's peri-urban areas, little attention is paid to requisite amenities for integrated neighbourhood planning as prescribed in the Physical Planning Handbook of Kenya, 2007⁴¹. An case of this is the proposed Green Isinya City that is located in Kajiado County 40 kilometres from Nairobi. I present this project as an example because, in my capacity as an urban designer and a registered architect, I gave advice on its planning and design. My professional partner and I handled the project intermittently from the time the client, Cretum Properties Limited—a real estate company previously involved in land buying and selling in the Nairobi Metropolitan Region—officially requested professional advise for urban design and planning beginning December 2013 up to January, 2015. The client had been in the land trade for two decades and wanted to venture into building affordable housing for middle-income Kenyans. Expectedly, the client had already commissioned a land surveyor (about one month before seeking urban design and architectural design services) to subdivide the land. The project was conceived a gated middle income residential development on 1000 acres of land 6 kilometres from Isinya town on the Isinya Konza dirt road (see map 4.4). The subdivision of the land was done with the minimum plot sizes being one-eighth acre plots. Blocks comprised 140 one-eighth of an acre plots. This subdivision was done meticulously to maximise the number of plots to be sold to prospective land buyers and homebuyers. The client, being inexperienced in actual property development, and being ambitious enough to seek to attract buyers from the Kenyan diaspora aimed to control the development of housing according to their utopian vision of a green gated residential community. This would be achieved by getting professional planning and design advise, by obtaining requisite county approvals for the project, by signing sales agreements with clients which would legally specify the types of housing to be developed on the plots as exclusively those designed by the commissioned architect(s) for the project and, also by commissioning the construction of some of the designed housing blocks for sale. Seeing how a 1000-acres real estate development based on the predetermined subdivision of the land would result not only in monotony of the residential housing and the streets but also in disorientation, an inequitable

⁴⁰ The Land Layby Kenya Limited website <https://www.landbankingkenya.co.ke/main/what-we-do/> (accessed on 1st July, 2015), for instance, encourages investors to buy land on the outskirts of the city and wait passively or actively until residential developers seeking land for their developments on the outskirts of cities make land values appreciate. The website says this type of speculation –termed “land banking”– is a common practice worldwide used by wealth individuals to consolidate their wealth.

⁴¹ The Physical Planning Handbook of Kenya, 2007, is a set of gazetted rules and regulations that guide the standardization of physical planning process and practice in Kenya. Among other aims it officially sets out comprehensive land use planning guidelines and standards for emerging opportunities and challenges in Kenya.

distribution of amenities, a compromise of public safety and disregard for the natural topography, my professional partner and I immediately requested for a topographical survey and a chance to visit the site for purposes of a site survey and analysis. We advised the client that the project needed to first be planned with respect to the climate and natural potentials of the site. We advised that the project master plan ought to be designed following the principles of urban design and planning for walkability, wayfinding, environmental safety and protection, integrated green and blue networks and energy efficiency.



Map 4.4: The Green Isinya City Master Plan, 2014. (Source: Cretum Properties Limited)

The client, at first, seemed to understand our concerns and to take our professional advice. They asked for time to first have the topographical survey done as my professional partner and I had requested. But just two weeks later, the client was adamant about retaining the subdivisions based on their expected sales and their dealings with the various cooperatives that had paid deposits on the land. The profit motive, the desire to sell the land to the highest number of prospective land buyers as they had previously done in their land trade, was at variance with the client's initial vision of a well-designed residential neighbourhood. With the prevarications, it appeared, the profit motive was at direct odds with (and winning against) the quality of space in the project.

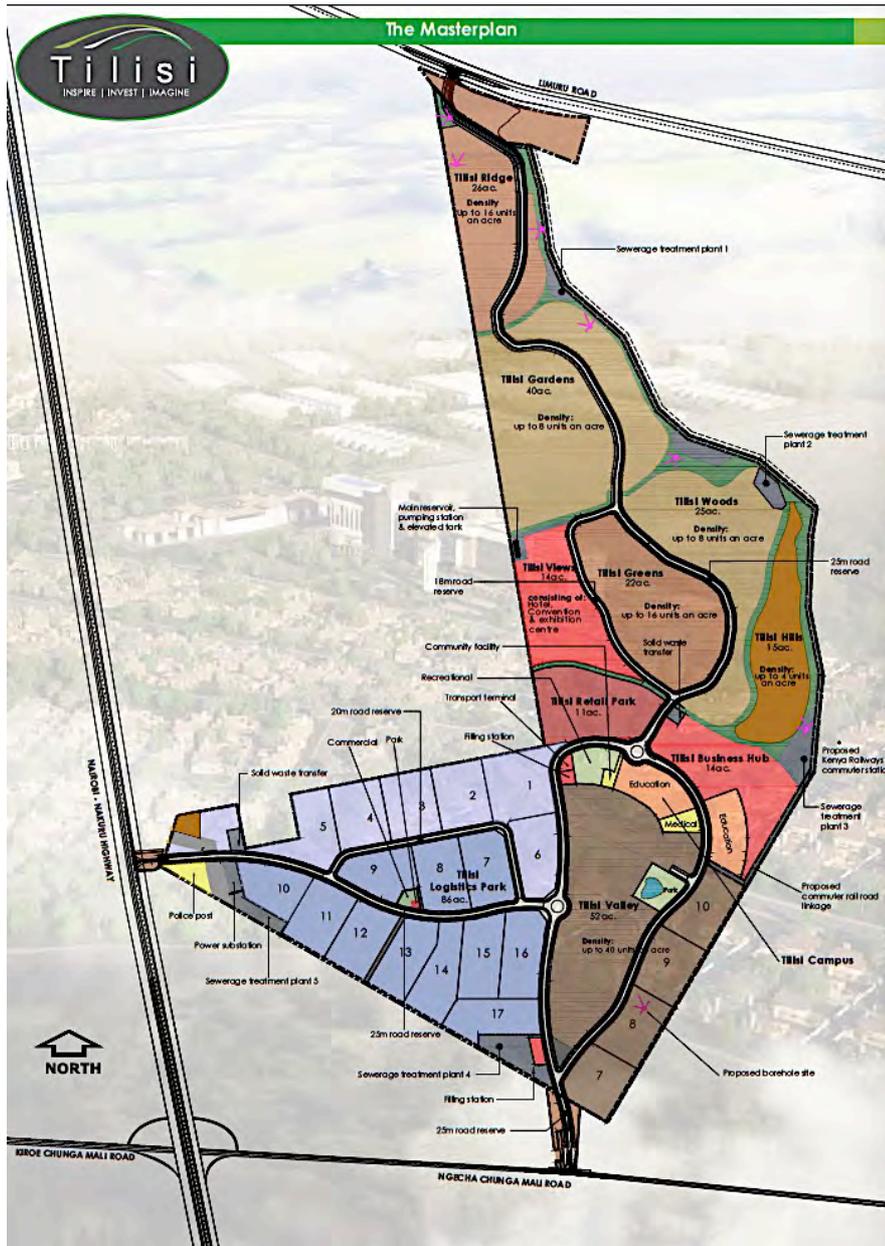
A further problem with the development of gated communities in the Nairobi Metropolitan Region is the way in which they are designed and visually represented, just like the mall developments, to be physically insulated from the surrounding developments and to connect only to transportation infrastructure. An example is the

Tilisi development in Kiambu County, a 400-acre mixed use real-estate development that will have more than 3,200 houses and a logistics park (see map 4.5). Launched on 18th May, 2015, the Tilisi development located in Limuru—on formerly agricultural land—provides “*escape from the traffic noise and congestion of the city*”⁴² (see plates 4.6 and 4.7).



Plates 4.6 (above) and 4.7 (below): Representations of the Tilisi Valley as a gated community unfettered by the deficiencies and squalor of central Nairobi. (Source: Tilisi Development Limited)

⁴² In an interview published in the Business Daily Newspaper of 19th May, 2015, the co-Chief Executive Officer of Tilisi Development Limited, Mr Kavir Shah, justifies the conception of the project as a self-contained neighbourhood on the basis of the continuing congestion of the central city and the decision to provide public utilities and transportation facilities exclusively for the use of the prospective residents of the Tilisi and the businesses in the Tilisi Logistics Park. The interview can be found on <http://www.businessdailyafrica.com/Developer-unveils-400-acre-Kiambu-real-estate-project/-/539552/2722528/-/24wngqz/-/index.html> (accessed on 16th June, 2015).



Map 4.5: The Tilisi master plan. This gated community is designed to be self-contained and to disconnect with its surrounding community. (Source: Tilisi Development Limited)

The development is planned to be privately managed and to be self-sufficient even as the surrounding Kiambu County communities continue to suffer what Zaghoul (1994)

refers to as “*benign neglect*”; a lack of utilities and requisite public services. For instance, Tilisi Development Limited will manage the estate, providing garbage collection services, water and power supply, roads and drainage, street lighting and CCTV even as the level of service and utility provision for the surrounding peri-urban communities remains unchanged: unsupplied or undersupplied.

A mapping of various-sized gated real estate developments in Nairobi (see map 4.6) shows that they are not only planned as self-contained neighbourhoods, but are also using up agricultural lands, community lands and—in Kajiado County—even threatening to encroach on wildlife conservation areas in the Nairobi National Park (Nyamasyo and Kihima, 2014). The scramble for land in Kajiado is also cited as a reason for the impoverishment of the Maasai community in Kajiado due to declining productivity of subdivided land and the forceful change of the sociocultural lifestyles of the Maasai from nomadic pastoralism to sedentary settlement (Boone et al., 2006, Boone et al., 2005, Nkedianye et al., 2009).



Map 4.6: The distribution of selected gated-community real estate development projects in the Nairobi Metropolitan Region between 2007 and 2015. This distribution is affected by the routes of implemented and proposed road transportation improvement projects in the Nairobi Metropolitan Region. (Source: Author)

The radial pattern of development in Nairobi with the central business district being both the focus and generator of movement (see figure 4.1) is not going to change any time soon, not even with the new planning initiatives being fronted by the government.

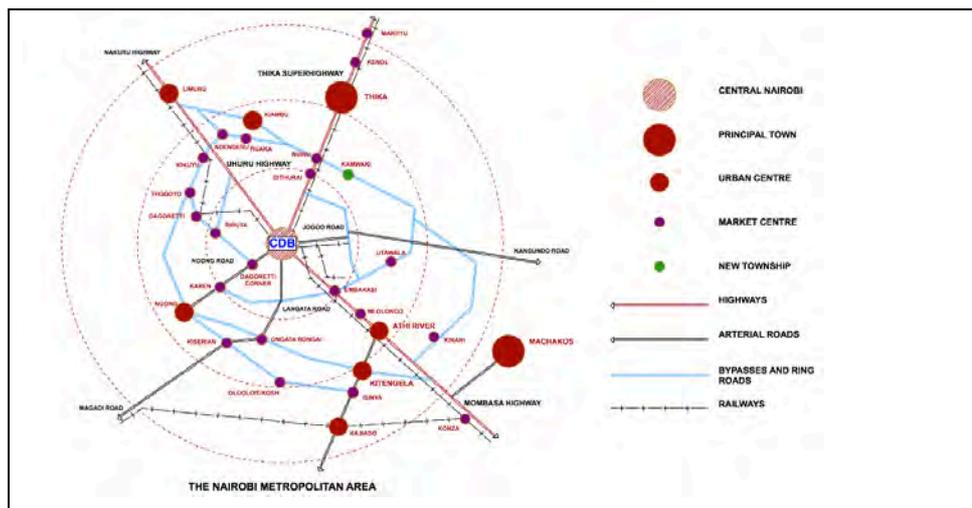


Figure 4.1: A stylised map of Nairobi's surface transportation infrastructure showing the predominance of the radial pattern even with the planned major highways. (Source: Author)

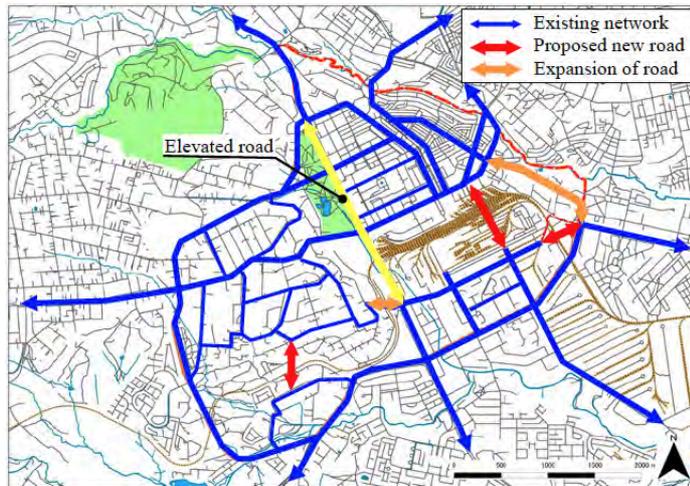
As it is, the segregationist patterns that have been identified by many scholars of planning and urbanism in Nairobi such as Emig and Ismail (1980), Obudho and Aduwo (1992), Lamba (1994), Olima (2001), and Anyamba (2006) stays. I can say this with some confidence because, even today with the functioning of devolved government in Kenya, centralised politics and the centralised planning systems that support it remain unchanged. The fields of the built environment are still compartmentalised, each trying the best to protect its own turf and propagate the interests of the incumbent “Big Men” of government. Meanwhile, interest in addressing the transportation needs of the urban majority is scant. In the raft of projects initiated and implemented since 2006 those that are expressly intended to address public transport problems—an example is the proposed Bus Rapid Transit system on Ngong Road—have been delayed and eventually shelved. The projects that are prioritised in lieu of the mass transit projects (such as the Standard Gauge Railway Project—are shrouded in arcane political and financial circumstances and shielded from public scrutiny by the executive. So, for Nairobi, the centralised model of city planning that favours the use of private automobiles while purporting to resolve metropolitan traffic congestion on a crisis-by-crisis response basis still prevails.

One of the ironies about Nairobi's current road transportation infrastructure proposals resides in the disregard for city history. History is an obstacle, just as buildings, fences, informal settlements and elements of the natural environment. In the Nairobi Intergrated Urban Development Master Plan of 2014, for example, two viaducts, one four-lane and the other two lane, are proposed to connect central Nairobi to the highways south and east of the central business district through the railway yard in a road transportation plan for an expanded central business district (see maps 4.7 and 4.8). The railway yard,

though being the singular development around which Nairobi was established, is now reviled as the single biggest obstacle to traffic vehicular circulation in Nairobi (Nippon Koei Company Limited et al., 2014). Of course in this view the assumption made is that road transportation infrastructure is paramount (and will in the foreseeable future be paramount) to all other forms of transportation in the Nairobi Metropolitan Region in spite of evidence suggesting that most people walk.



Map 4.7 : Proposals by the JICA Study Team to connect the Nairobi central business district to the road networks to the south and east using a viaduct above the Kenya Railways Corporation yard at Nairobi. (Source: JICA Study Team)



Map 4.8: Proposals by the JICA Study Team for the expansion and connection of the road network in the Nairobi Central Business District. (Source: JICA Study Team)

It remains, as Olima (2001) noted, that the primate urban centre, Nairobi, plays all major roles in Kenya's development. Consequently, Obudho (1992: 210) argues,

“the (principal) decision-makers of the state politicians, technocrats, entrepreneurs and landowners live and derive their political material support from these urban centres. They ensure that the allocation of goods, services, income and other resources are carried out disproportionately (in favour of) these urban centres at the expense of other parts of the country.”

So the current road infrastructure transformations in Nairobi, given the situation in the desperate 1990s era, are both impressive and ambitious. But are they intended to work for the urban majority? Next, I look into the political structure of planning to find clues about what the new highways are about.

4.4 THE POLITICAL STRUCTURE OF PLANNING IN NAIROBI

As discussed in the previous section the process of the conception and design of large transportation infrastructure projects in Kenya is shrouded in political mystery. This is a curious fact given that, at least on paper, these projects are undertaken for the benefit of the public. Given how the realisation of these projects is a manifestation of power relationships (Williams, 1993) it is important to deconstruct why the Government of the Republic of Kenya approaches large transportation infrastructure projects the way it does. With consideration to this in this section I attempt to define the role of politics in planning and to show how this phenomenon manifests in space.

The sheer difficulty that other scholars⁴³ and I have experienced in obtaining information on the new road transportation infrastructure projects from, ostensibly, autonomous government departments during fieldwork suggests that agencies involved in planning infrastructure are reluctant to release information to members of the public and, particularly, to researchers. Though in my case I applied for and was granted requisite written permission by a public research institution, the National Commission for Science, Technology and Innovation, a government parastatal with the express mandate to grant such permissions, and though I identified myself as a lecturer at a public university, I found it arduous to elicit information from engineers at the Kenya National Highways Authority. As one senior engineer's secretary intimated to me during one of my visits, “*public information is no longer expressly public. The government's clandestine workings could be exposed and individual's jobs are at stake.*” Looking back at the events surrounding the reluctance at that time I opine that

⁴³ See, for instance, Teiplelke (2014) and Becker (2011).

public information is only selectively public because it may be used in such purges of the civil service as one where, after public outcry, on 26th March, 2015, the President of Kenya suspended public officers mentioned adversely in a corruption dossier handed over to him by the Ethics and Anti-Corruption Commission of Kenya. Including the cabinet minister for transport and infrastructure! So my construction relies largely on the descriptions of the postcolonial state in Kenya and the current affairs related to the transformation of transportation infrastructure projects that unravel deeper political machinations.

Here, I piece together clues on the workings of the postcolonial state to develop one plausible argument regarding the relationship between politics and planning in Kenya. My argument is that **the representations of the power of the state and the application of this representative power in planning, have not fundamentally changed**. The government may make claims to the recent sweeping political reform. Government institutions may have changed nominally over the years. And the personalities occupying or acting in various official capacities may be different today. However, official government perpetuation of a politics of class endures. Myers (2003: 4) argues, specifically, that the role of politics in planning remains the same because,

“Colonialism’s legacy in Africa is still quite vivid, in political, economic, cultural or geographical terms”

This position is further contextualised by Rakodi (1995), Home (1997), Yeoh (2001) and Myers (2010) who claim that though African countries have undergone momentous changes since their independence urban processes have largely remained the same. The postcolonial planning of Nairobi—even though it has been largely ineffective, functionally uncoordinated and superceded by diverse informalities (Anyamba, 2006), has progressively reinforced the old colonial patterns of exclusion by class (Obudho and Aduwo, 1992, Olima, 2001). Road planning in Nairobi, in particular, has projected the illusion that the city’s public spaces are indeed accessible by all members of society. In reality, road are boundaries in which the deathly speed of cars constitutes the material of separation and the presence of official surveillance controls social behaviour so as to favour the car-dependent bourgeoisie. With the enduring of discrimination it is clear that, *“the end of colonialism did not end the influence of colonial structures in, or attitudes and approaches to, cities”* (Myers, 2003: 7). But why is it that the postcolonial Kenyan state still uses planning to achieve partisan political ends? Why is it that the state still fails to be inclusive (Lamba, 1994) in the way in which it responds to a variegated urban landscape with diverse social and economic situations? Why does it choose to locate such projects in Nairobi and not in other cities in Kenya?

The reason the state plans Nairobi the peculiar way it does is because its political machinery feels it needs to project an image of potency and control in order to keep the

marginalised majority mollified. In shaping Nairobi's urban landscape the state of Kenya seeks to attain legitimacy in the eyes of the people of Kenya so that it may rule them. In other words, *the [Kenyan] postcolonial state (...) [uses] urban planning to shape the physical spaces of city life as a way to create consent as well as [exert its] domination*" (Myers, 2003: xi). Myers describes this type of planning as an "enframing order." That is to say that in urban planning the state employs the urban landscape as a readable geographical text that necessarily has to bear the visible political and ideological stamp of the state. This suggests that the state recognises the link between political power and space and in urban planning seeks to control both physical and social space. Myers (2003) and Home (1997) describe the central tasks common to African governments since colonial times—in spite of their shifting ideologies. These have been:

- (a) capitalist ideology/accumulation: securing conditions for the accumulation of (fungible) commodities.
- (b) utopian experimentation or legitimation: the achievement and maintenance of a framework of stable political order and effective control (...) over the indigenous population(s) with their active consent.
- (c) state control/domination: through provision of security, and the maintenance of order.

To achieve the goal of accumulation, the Government of the Republic of Kenya has from time to time pointed to its belief in investment in large transportation infrastructure projects as the primary driver of economic growth. This belief has, in turn, been politically brandished as justification for national budget increases, for more government borrowing from domestic and international sources and for increases in the rates of income taxation⁴⁴. The large transportation infrastructure projects, then, are the visible signs of the legitimacy of government for purposes of quelling discontent and giving the public the impression that government works on their behalf and for their benefit. The public, in turn, ought to be grateful; grateful enough in fact, as President Kibaki advised in his address on the opening of Thika Superhighway, to be "civilised in their behaviour" when using the new highway (see his speech in Appendix A). This, then, allows the state to impose a new order in space; to trigger an officially endorsed type of social transformation by introducing new rules that prescribe access into the road and the behaviour of different individuals and classes of people about road space. In this manner, the central government tasks of accumulation, legitimation and

⁴⁴ The Government of the Republic of Kenya has progressively increased the national budget almost fourfold between 2006 and 2015 from 550.1 billion shillings to 1.8 trillion. This is not just a reflection of increasing public obligations but also an increasing source of partial investment for large infrastructure projects under the so called "transformation agenda".

domination are interrelated and mutually reinforcing and this reinforcement is spatialised in government construction projects.

However, the performance of the central government tasks has been far from straightforward or even predictable in the manner envisioned by the political machine. As scholars such as Rakodi (1997), Myers (2003) Meredith (2005) and Anyamba (2006) note, the operations of many African governments since colonial times have gone less than swimmingly. Postcolonial African governments—beset by capital limitations, shifty or ephemeral structures and internal power struggles—have continued to hold together and operate mercurially (Myers, 2003). Spuriously. Under this *modus operandi*, planning (in relation to the achievement of the states overarching tasks) is at best accidental and at worst adverse. Berman's (1990: 7, 21) evidence relating this debacle to colonial times alleges that,

“[The postcolonial African] state has “definite limitations as an instrument of capital... beset by periodic crises and struggles that [lead] to the destruction or transformation of its structures.” Rather than a finely tuned structure of domination, the (...) state is more a “diverse and ambiguous collection of parts... partially integrated and partially in conflict with each other.” The bureaucracy “mediate(s)” between these diverse and ambiguous parts as best as it can.”

In this situation, and as I discussed in the section on transportation planning in chapter 3, the workings of the Kenyan government has been fraught with overlapping or ambiguous agendas. Both centralisation and fragmentation coexist in an uneasy coalition (Wasike, 2001). Government institutions and their administrators struggle to act as the agent of a coercive and corrupt system of exploitation and, simultaneously, to be seen as legitimate and effective in the eyes of the public (Murunga and Nasong'o, 2007, Myers, 2003, Ogot, 2003, Teipelke, 2014). These roles are often conflictual, making multisectoral government affairs awkward and sometimes resulting in public suspense and public power struggles between different agencies (Myers, 2003, Teipelke, 2014, Wasike, 2001). But with this ambiguity how, then, is large transportation infrastructure planning specifically a tool for the exertion of power in urban space? First, mobility is important in Kenyan politics. The ability of leaders to go and meet citizens has been considered key to the successful reign of both the centralised authoritarian and the democratically elected governments of Kenya (Chege et al., 1999, Myers, 2003). Since the days of the first president, Jomo Kenyatta, presidential road tours have been highlighted in the Kenya's print and electronic media—particularly during election campaigns (Chege et al., 1999). As Eric Dutton, the former private secretary to Sir Robert Thorne Coryndon, Colonial Governor of Kenya 1922-25, contended even before Kenya's independence, mobility confirms to the public the visibility and operability of the power of government in the lives of the common people (Myers, 2003). So the link between Kenyan politics and transportation planning is

undeniable. Second, large transportation infrastructure offers opportunities for the permanent exhibition of government planning ambitions in the postcolonial era. Myers (2003: 104) supports this stance (when he invokes the opinion of Cumming Bruce on the Zanzibar Dutton Project of the 1940s) that:

“To some degree, the professional attitudes or frames of reference for urban planners in both of those settings as well as in Nairobi today remain influenced by [those established in colonial times]. For instance, the tendency to approach planning problems by thinking grandly, to come at the city with a “stupendous hammer to crack a few nuts.”

This contention seems to be true given the increased hyping of the Thika Highway Improvement Project (THIP) beginning that period in 2006 just before its implementation and continuing right up to its 2012 opening. Consider this: a study commissioned by the JICA in 2006 (Katahira & Engineers International, 2006) showed that the Thika Highway had a throughput of 60,000 vehicles. However, in the year 2009, the Minister for Roads, Mr Franklin Bett, alleged that, “*The Nairobi-Thika Road is one of the busiest roads in the country. We have registered 250,000 vehicles to and from Nairobi. That is the road coming into Nairobi and going out of Nairobi with the largest number of vehicles. Hence, the investment that we have put into that road.*”⁴⁵

Thereafter reports began appearing in the press stating that the said throughput had radically increased, congruent with the Minister for Roads had said off-the-cuff, more than fourfold—to 250,000 vehicles⁴⁶. Government officials, subsequently, cited this baseless inflated statistic when addressing the public in national press conferences covering the construction of the THIP.

Also the claim that before the Thika Highway was constructed, it would take two hours to get to Nairobi from Thika is not certainly true for all travel situations. The timesaving achieved by the construction of the new highway is overrated especially since the new Thika Superhighway is still perennially clogged by traffic and the other major highways in Nairobi that have undergone transformation are no better in terms of traffic flow as of February 2015 (see plate 4.6). During the rainy season, as happened at Githurai on the fateful afternoon of June 8th, 2015, the transformed highways get massively flooded causing congestion and the stalling of Nairobi’s second-hand cars in turbid churning

⁴⁵ The then Minister for Roads, Mr. Franklin Bett, made this contribution at the Kenya National Assembly, according to the Kenya National Assembly Official Record, Hansard, 11th August, 2009, in reply to questions on road construction projects and funding for roads from members of the National Assembly.

⁴⁶ Instances of this inflation of throughput as a justification for the Thika Highway Improvement Project can be found on articles such as <http://www.nation.co.ke/News/regional/Highway+set+for+completion+by+year+end+/-/1070/1118870/-/sfbvhtz/-/> (accessed on 28th, May, 2015) and http://www.newsfromafrica.org/newsfromafrica/articles/art_12213.html (accessed on 22nd April, 2015).

waters. The resort to arbitrary statistics as a justification for the THIP was a ploy for narrowing the focus of planners and engineers into the building of a predetermined large transportation infrastructure project as a legacy of the Kibaki government (an impressive addition to the prioritised infrastructure loan portfolio of the African Development Bank) rather than as a real solution to the everyday transportation needs of the residents of the city of Nairobi. In fact there was no discussion whatsoever as to how the transformation of the Thika Highway was planned to fit in with an overall strategy for transportation planning in the Nairobi Metropolitan Region.



Plate 4.8 A post appearing on the official Facebook account of Governor of Nairobi County, Evans Kidero, on 22nd February, 2015 illustrating the impact of traffic jams on county affairs in spite of the completion of large road transport infrastructure projects. (Source: Author) *The year 2016 appearing in the text of the post is a typographical error. The actual year is 2015.

References were instead made to a grand regional transportation corridor across East and Central Africa (quite similar to Cecil Rhode's Cape-to-Cairo imperial ambitions) and to trite econometrics that offer, at best, shaky contextual grounding for the project's underpinning economic and social transformation arguments. It appears, then, that the

Government of the Republic of Kenya, once it determines that it is going to embark on a large transportation infrastructure project, is virtually unstoppable. At least not by dissenting public voices. There is no quantum of public outrage, no level-headed debate and no law on public participation that can effectively put to task the processes of planning and trigger a reconsideration of the type(s) of projects they generate. This is certainly not just the case with the transformed road infrastructure projects but with the current SGR project—at a cost of 327 billion Kenya shillings: equivalent to 4 billion US dollars—the most expensive project of any type since independence. Public opposition to this project even by civil society and by a renown economist, Dr. David Ndii, was cursorily dismissed as project details and financing contracts were officially shielded from public scrutiny.

From a reading of the Kenya Vision 2030 document, then, it is possible to put these transportation projects into perspective. Large transportation infrastructure projects are seen as a break from a past where local ways of doing and of being are the scapegoat for backwardness, bureaucracy, slow economic development and the prolificacy of corruption across all (social, political and, economic) sectors. In setting off a new era, these projects are outward looking, the symbol of globalisation: the culmination of new ideas from foreign firms and experts with the investment of borrowed capital from foreign sources and faceless “development partners.” From the presidential speech made during the opening of the Thika Superhighway (see Appendix A) we can glean that transportation infrastructure is seen by the government elite as the way to differentiate between who can be on and use the road and who or what remains outside it. Simultaneously, this condescending disposition dictates how local people should spruce up their behaviour to match with the sophistication created by the new highway transformations. In short, the state continues in this pursuit of large transportation infrastructure in a blind emulation of the failures of past regimes at exerting political domination. Myers argues against these predictable project-based recipes for development in Africa by describing the conditions that circumscribe their undertaking. He (Myers, 2003: 134) laments that,

“The chief reasons for a lack of success [are] (...) the use of externally derived planning concepts, a precarious financial dependency (on world market prices... and on the whims of external donors), and a marginalisation of the interests and ideas of the urban majority.”

This is why in spite of the massive investment in these new large transportation road infrastructure projects—essentially government initiated public projects that Mitchell (1988) and Myers (2003) refer to as “enframing strategies”, their consequences are, mostly, not those intended. Instead, the urban majorities continue to reframe these projects and the cities they transform in ways never sought by the power structures

planning, designing and controlling them. This reframing happens faster and more intrusively given the political transitions in Kenya in the last two decades. Democratic space has increased following the multi-party transition in 1991. Subsequently, changes in law and governance—building up to the devolution of government entrenched in the new Constitution of Kenya promulgated in 2010—has spurred an increasing vociferous civil society (Kagwanja and Southall, 2010, Murunga and Nasong'o, 2007). Nairobi has always been Kenya's hotbed of human activism (Chege et al., 1999) and remains so even today (Murunga and Nasong'o, 2007). Public protests and resistance to authority are more prevalent here. So we can construe that the emergent invasion of highways suggest that an entirely different city exists for most of Nairobi's residents, "*one that has navigated or negotiated its way around many of the frames placed on it*" (Myers, 2003: 3).

4.5 INFUSIONS OF POLITICAL POWER INTO NAIROBI'S TRANSPORTATION PLANNING

The reification(s) of political ideology into transportation planning can be seen as a construction of an order by the incumbent government. This order, manipulates, "*(...) architecture, landscape and design features in political ways; (it) shape(s) space in domestic and neighbourhood environments; and gender(s) those environments, to further (...) the "cultivation of public opinion", to make the populace accept [state] rule and goodwill as common sense reality*" (Myers, 2003: 8).

In Kenya's spatial context that is defined by urban primacy this order is invariably expressed from the location of the existing seat of government with its hierarchy radiating outward; from the central district of the capital city to the rural town. In Kenya, Nairobi, just like other capital cities in Africa has never been disputed as the seat of power since its establishment in colonial times. All physical manifestations of the power of government over the Kenyan people are vested almost exclusively in it. This is expected since, as Christopher (1994: 419. Cited in Myers, 2003: 6) notes,

"[The function of the capital city] distinguishes it from all other cities [in a national hierarchy, because it is the seat of government. (...) This means that] government ideology is firmly implanted upon the capital cities [especially given the crucial role of the] urban image (...)."

The influence of urban planning ideas that have their origins in British colonial aesthetic and legal principles is therefore powerfully evident, not only in the maintenance of this urban image, but in the very basic features of the city (Myers, 2003, Rakodi, 1997). In Nairobi, buildings such as the state house and the railways headquarters still loom large over their precincts. But so do those of the postcolonial era such as the Kenyatta

International Conference Centre and the highrise buildings of the governments departments along Harambee Avenue. In this visual dependence on buildings as the eminent symbol of state power in the 1980s and 1990s, transportation infrastructure—particularly roads, railways and all official attempts at planning public transport—fell apart as the systematic practice of corruption in government whittled away the government's fiscal ability to build and maintain all forms of physical infrastructure (Ed. Murison, 2004, Varma, 2012). Since the transition from the authoritarianism of the 1980s, from single party to multiparty politics, however, the clamour against corruption became the populist mould in which political ideology is formed—an iterant promise that in the post-Moi era all public property would be appropriated for public good.

So for Kenya's government(s) reigning since the aughts, revolving about the same political elites and, ostensibly, signaling an overt break from this sordid past, large transportation infrastructure projects have usurped the role played by colonial buildings of the past—imparting upon citizens government rule and projecting its legitimation. Infrastructure building, in other words, is a resort for achieving the central tasks defined by Myers (2003) and Mitchell (1988). Those imposing Herbert Baker-designed government buildings constructed in the colonial period and those of the postcolonial Jomo Kenyatta era are still functional, performing the task of legitimising the legacies of previous regimes regardless of their corruption and their failures at urban planning. So a return to buildings would not be appropriate for the reification of the ideals of a new era. Regimes in the last decade have sought to create the illusion that they are not as aloof or as corrupt as the governments of the past; to be seen to be closer to citizens and to build their legacy on infrastructure as the visible impress of their reign. How, then, does the planning and design of new highways epitomise the ideologies of the present government?

First, the pattern of transformed infrastructure is a reinforcement of the segregationist pattern that has existed since colonial times. It is, indeed, a reinforcement of segregation underlined by the construction of more formidable physical barriers such as massive walls, tunnels, the widening of the highway and severe restrictions of access from local areas. This heavy-handed restriction of access to highways epitomise a containerisation, a separation of inside from outside, basic to “enframing the city” (Myers, 2003). This containerisation differentiates more sharply between categories of road users. Two facts support the assertion of segregation as a continuing theme; (i) the needs of pedestrians using the transformed highways were disregarded in all of the projects until the vehicular lanes were completed and accidents involving pedestrians had increased drastically⁴⁷, and, (2) segregation is enforced by draconian rules about behaviour on the

⁴⁷ The highways were exclusively designed for cars until 2014 when pedestrian bridges were built on Thika Superhighway and on Mombasa Road. This neglect of all non-motorised transport and the dangers it presented is supported by newspaper

transformed highways including such preposterous propositions as charging pedestrians with attempted suicide for crossing the highways at undesignated locations⁴⁸. The role of roads as a distinct social marker in the evolution of this segregationist pattern is documented in the planning of Pumwani. As Myers (Myers, 2003: 50) posits:

“The siting of (Pumwani) was aimed at increasing the spatial efficiency of the African labour force in the city while at the same time protecting European areas from racial or health-related “contamination.” It grew out of a gradual emerging enframing strategy where “the control of urban space became more than the control of infection: it became control over African social and sexual relations.” (The Pumwani project) included construction of roads, drains, public toilets, and washing blocks, along with a layout of plots in a regular, rectangular grid. Pumwani’s original residents were Africans forcibly relocated from squatter areas that had cropped up further westward in the city, nearer the downtown, and nearer the white areas. This new Native Location was planned to be the only legal area of residence for Africans in the city, and its form on paper was very much a tool of dominative control. It had clearly defined natural and political borders marking it off from the rest of the city—pointedly, in its position well across the Nairobi River from downtown. Pumwani to this day has a distinct inside and outside as a neighbourhood unit, with **limited entrance into and exit from it on the road grid.**”

Second, the road system design recreates an urban spatial hierarchy typical of intentions of control present in the planning of previous regimes dating back to the colonial era. The purpose of this hierarchy and its visibility is to glamourise the seat of government so that, *“the glamour of the capital could (...) appeal to [citizens] throughout the country who would regard [this glamourisation of the capital city] as earnest of the sincerity of [government] interest in [civic] development.”* (Myers, 2003: 61).

This hierarchy, therefore, radiates from the central city outward into the rural areas. As citizens approach the city of Nairobi from the surrounding region restrictions on behaviour and movement are indicated by the presence of visible controls or cues of more surveillance and more impersonal space or hostile and hard space. Myers (2003) describes the effect of this spatial hierarchy in the design of African cities of formerly colonized countries. He (Myers, 2003: 9) suggests that,

“The often well-surveilled (...) spaces of observation served to distance traditionally rural Africans from the communal, “fused” conceptions of space with which they approached the city, seemingly making the rational, Western planning approach to

articles in 2012 such as <http://www.nation.co.ke/News/Time+to+stop+avoidable+deaths+on+killer+highway+/-/1056/1396002/-/view/printVersion/-/d888asz/-/index.html> (accessed on 12th November, 2014).

⁴⁸ Faults of design are often blamed on the victims of misfortunes occasioned by poor design rather than engineers or the design process employed in these projects. Draconian laws are then mooted progressively reducing access by disadvantaged groups of road users. For the kind of reasoning applied by authorities in justifying such draconian laws see the article <http://www.capitalfm.co.ke/news/2014/08/jaywalkers-to-face-attempted-suicide-charges/> (accessed on 14th November, 2014).

urban space normalised in their eyes. These central spaces also served as reminders of the might of [political] power to the general population.”

Examples of this surveillance and control includes multiple traffic controls in conflict with each other such as the traffic police controlling vehicles at roundabouts in spite of the presence of properly functioning traffic lights. Cameras are also placed, ostensibly, to monitor traffic movement, but hardly work⁴⁹ and are disconnected from all other modes of traffic control. The Governor of the City County of Nairobi imposed an arbitrary speed limit (50 km/hr) on the transformed highways that neither conforms to existing highways codes nor fits in with the objective of the design of the new highways to enhance vehicular speeds. In the city, fragmentation in planning is displayed in the way these controls are instituted: various authorities—compete rather than coordinate, to control traffic including the traffic police, officers of the National Traffic Safety Authority, City County of Nairobi traffic marshals, the security detail of various politicians and the presidential escort. This is consistent with Myers (2003: 9) argument that “government” in Africa really is an ad hoc amalgamation of agencies with either competing or ambiguous agendas: ,

“Like the planning mechanism of most African states today, the enframing system of control that colonial states developed in Africa was anything but perfect. (...) Analysis of colonial and postcolonial states generally brings to light the inability of the apparatus to accomplish its goals, even some of the most mundane legal and juridical components of them. African states (...) have consistently been undone in trying to use planning and building control to implant their ideological maps onto cities, or to combat (...) the “persistence of disorder”

This is complicated by the quotidian reality that, in the unequal and corrupt system that define “government”, highways in Nairobi are a major source of revenue for traffic police—most often in the form of illegal bribes extorted from motorists and *matatu* operators⁵⁰. On the other hand impersonal and “unfriendly” spaces are defined along the highway by physical barriers, razor wire, pervasive hardscapes and design that discourages stopping except where designated by those with the power to do so.

Third, the neoliberal approach to governance and planning as detailed in the Kenya Vision 2030 document **is directly responsible for the outsourcing of solutions for the design of large transportation infrastructure**. It not only employs visual

⁴⁹ For example, these cameras were found to be out of working order and useless in capturing information that could have helped with the investigation of the shooting death on 7th February, 2015 on the Uhuru Highway of the late Member of Parliament for Kabete, George Muchai.

⁵⁰ Public complaints about extortion by the traffic police and officers of the National Transport Safety Authority in cahoots with officers of courts of law have increased since the new highways were completed in Nairobi according to the article <http://mobile.nation.co.ke/news/Traffic-Police-Fines-Motorists/-/1950946/2660718/-/format/xhtml/item/0/-/ae1qo/-/index.html> (accessed on 7th May, 2015).

representations of modernity, globalisation and mobility but goes further to prescribe that Kenya should emulate Westernised models of mass consumption economics and modernised society as the quintessence of social and economic advancement regardless of the complex mosaic of urban realities typical of Kenya's cities and towns. But this is expected. As Anthony O'Connor (1983: 237), argues,

“the physical form or spatial structure of [African cities] is... being influenced to a very large extent by the planning decisions of a few foreign firms and thousands of local individuals and families, rather than by officials of any town planning department”. The aggregate impact of these local individuals and families in African cities may be “less discernible” than the decisions of rulers or foreign firms. Yet it has in many cases been “ultimately more significant, and affected the lives of more people directly.”

As a result of this the qualities of road space are strange—portions marked by road signs that are not in the highway code and that motorists do not understand, dangerous blind spots caused by artificial landforms, new out-of-scale physical elements and visual discontinuities that didn't exist on the old roads.

Lastly, the recent large transportation road infrastructure projects in Nairobi are really about creating visual impressions for political reasons. They are not about responding to urban realities by employing design and planning strategies inspired by honest contextual analyses of the transportation needs of the residents of Nairobi. What matters to the government is securing national fame in the region and eliciting the patriotism of its citizens. Those come with the declaration that such infrastructure projects crown Kenya the commercial and technological hub of East Africa. And that this crown is the panacea for fixing the previously mismanaged economy. These official intentions manifest in two ways: (i) in the way in which the visible elements of highway infrastructure have been overemphasised at the expense of those that are not quite visible—that is, those that are invisible until they fail to work and cause disruptions to traffic throughput. On both the Thika Superhighway and the Mombasa Highway, streetlights work intermittently and even then only along certain stretches. Drainage recurrently fails in the rainy seasons causing destruction and death. Guardrails and light poles damaged during accidents are rarely replaced. Road signs and road marking are missing in some sections. Traffic is not calmed on sections with heightened pedestrian activity and with no suitably designed crossing points. These elements of design though crucial to road safety—including even the safety of the prioritised motorists—are considered less important than traffic flow along the highways that is a function of two highly visible physical qualities: road width and road surface smoothness. Traffic throughput is considered so important such that Governor of the City County of Nairobi in April of 2015 personally took responsibility for improving vehicular traffic flow even though he is not an expert in traffic planning. To this end he went to the extent of implementing what he himself termed trial-and-error methods including proposing the

removal of roundabouts and carrying out the so-called “drum experiment”⁵¹ (see plate 4.7). He disregarded everything else that makes roads function in multifaceted ways as they do in Nairobi.



Plate 4.9: A picture showing “the drum experiment” at the Nyayo Stadium roundabout on Mombasa Highway on 7th April, 2015; an initiative by the Governor of the City County of Nairobi to reduce traffic congestion on one of the transformed highways. It eventually worsened congestion and was discontinued on 14th April, 2015. (Source: Nation Media Group)

(ii) in the way in which rather than treating the city structure plan as a palimpsest onto which to inscribe or insert new structures to suit the everyday needs of the urban majority, the government and its agencies have time-after-time preferred instead to preserve the original deleterious template. They even reinforce it—through the recent imposing highway transformations—in spite of claiming that they have the interest of Kenyan citizens in mind when embarking on these “projects of exclusion”. The original segregationist hub-and-spoke pattern serves to strengthen the hub and to expropriate from the hinterland. Consequently, the congestion characteristic of the highways converging at the centre is not merely an indicator of a transportation planning failure, but also the alarm-bell for the sharpening hierarchy of inequality across the city amid a callous postcolonial political conscience in consort with a complicit planning regime.

⁵¹ The “drum experiment” was a highly disruptive attempt by the County Government of Nairobi at decongesting heavy traffic on major city highways in the month of April, 2015, even after the completion of the vaunted highway improvement projects. For specifics on this intervention read the article <http://nairobinews.co.ke/kidero-reopens-bunyala-and-lusaka-roundabouts/> (accessed on 2nd May, 2015) and <http://www.radiocitizen.co.ke/index.php/news/item/28329-motorists-thank-kidero-for-removing-drums-on-roundabouts/28329-motorists-thank-kidero-for-removing-drums-on-roundabouts> (accessed on 6th May, 2015).

4.6 NAIROBI'S TRANSPORTATION PLANNING PROCESS AND ITS ACTORS

Several authors of transportation planning theory in the Global South remove the planning process from its concomitant political process. Beukes (2011), for instance, ignores the role of local politics in design in his studies of highways in Cape Town, South Africa, resorting instead to settlement population statistics and digital spatial modelling to back his advocacy of context-sensitive road design. Teipelke (2014) does not discuss, in any revelatory manner, the vested political interests holding planning hostage. He, instead, proposes that in order to inflect the path of transportation planning in Nairobi from the arcane top-down imposition on the city and its people, that it currently is, to a participatory and emancipatory economic paradigm, remedial action needs to begin at the bottom by convincing low cadre planning officers to include elements of social equity in implementation of projects. He naively believes that low cadre planning officers may have a say in what finally gets implemented on the ground and so may effect ameliorative change. These benign approaches to the style of planning in Kenya, by making assumptions that government works as given in official documents, by skimming through the surface of policy and by eliminating politics from their discourses ignore the true context in which planning occurs. They, perforce, do not go far enough in addressing the problems of transportation planning in their African city contexts. They cower from the underlying political drivers affecting planners, the planning process and planned projects. A more holistic approach requires a decided confrontation with the nature of Kenyan politics; an exploration of how vested interests are camouflaged as public interests, dressed in rhetoric and couched in statistics. And an acknowledgement of the position of the planner involved in the planning design and implementation of road transportation infrastructure projects is key to understanding why and how projects are reframed.

One common thread through argumentation about road transportation infrastructure projects is that planning professionals in Africa act as middle-agent functionaries, these often being people who provide key legitimising tactics for the state and its neo-liberal politics (Myers, 2003). This view of planning as a profession is not a recent development; it originates from a political analysis of the nature of planning since the colonial times. The structure of planning closely reflects the kinds of institutional and intellectual linkages that have developed between African elites with political clout and the ruled public. It is intelligentsia often appointed by the state and whose loyalty to the state is linked to the progress-oriented discursive formations like urban planning, architecture, economics and civil engineering who wear the planning mask on behalf of the state and legitimise the planning process (Myers, 2003, Rakodi, 1997). Because they are academically qualified—this qualification granting power and the tools for implementing transformative projects—their collusion with the elite does not raise

questions until planning fails and results in the disruption of everyday life. The state functions normatively precisely because of these planning agents; agents who facilitate the reification of edicts and oversee the application or willful circumvention of laws in practice (Myers, 2003).

This structure of planning is represented in the transformed road transportation infrastructure projects in Nairobi. First, the planning process for the transformed highways has not been inclusive even for professionals in the built environment. Evidence suggests that civil engineers—with a penchant for hard engineering solutions—were involved in the planning. Urban planners were minimally involved; in fact some planners say they were left out of the process entirely⁵². The Department of Physical Planning as well as local authorities in the Nairobi Metropolitan Region were also left out of the planning, design and implementation of the transformed highways. Professor Peter Ngau, a scholar and planner in Nairobi, argued that the transformed highways would be flawed because of the exclusion of the input of a team of professionals in the field of urbanism because of the overlooking of land use planning in metropolitan Nairobi.

The public was also excluded from the transportation corridor improvement projects (Teipelke, 2014). They were unaware not only of public information concerning the funding of the project, but also the day-to-day processes of the construction of the project that affected their everyday lives (The Kenya Alliance of Resident Associations and Center for Sustainable Urban Development, 2012). There were incidents and accidents along the highway that would have been avoided had the communities living along the highway been informed of what was going on. I trace back the roots of this deliberate exclusion of both consultants and public participants to the conception of projects and where the power to make decisions on highways lies. The official and professional processes of planning and the design of the transformed highways have been predictable to a fault. They happen in the following manner:

(1) They are appraised and funded by international institutions including the World Bank, the African Development Bank and the Exim Bank of China. These institutions justify the need for the projects by references to unlocking the potential of the region through improved road transportation infrastructure as the spark for economic growth

⁵² Professor Peter Ngau, the Chairman of the Department of Urban and Regional Planning at the University of Nairobi in an interview reported in the Daily Nation Newspaper of 22nd September, 2010 found at <http://www.nation.co.ke/news/Key-experts-left-out-in-city-roads-expansion/-/1056/1016064/-/94llyaz/-/index.html> (accessed on 12th June, 2015) said that the Department of Physical Planning, the Ministry of Nairobi Metropolitan Development as well as local authorities with jurisdictions in the Nairobi Metropolitan Region were left out of the planning and design of the transformed highways; the Thika Superhighway and the Eastern and Southern Bypasses. In this interview he further warned that the expansion of roads would not solve the traffic congestion problems of the city of Nairobi.

and the trigger for social transformation (see for instance African Development Bank, 2007 and Louis-Berger (2011)).

(2) They are contextually studied, planned and designed by foreign firms such as The Louis Berger Group Incorporated (USA), Nicholas Dwyer International (Ireland), the Civil Engineering Services Pvt. Limited (India), and, COWI A/S (Denmark) with some collaboration with Kenyan registered civil engineering firms⁵³ such as APEC Consortium Limited, GIBB Africa, Abdul Mullick Associates and Otieno Odongo and Partners.

(3) They are implemented by contractors registered in foreign countries assisted in supervision of the construction of projects by engineers from the Kenya National Highways Authority or by resident engineers in Kenyan registered engineering firms collaborating with foreign engineering firms.

A Kenyan engineer working for a firm, APEC Consortium, that had collaborated in the transformed highway projects informed me that since some of the designs done by foreign firms make use of new construction technologies the input of local professionals is to supervise, test and rubberstamp the work of the foreign firms in exchange for a cut of the revenues accruing from the consultancy work. Actual site supervisions were attended by foreign resident engineer(s) sent to oversee the day-to-day implementation of the project and to handle or convey to the head office of the foreign firm unforeseen and complex site situations. The engineer expressed pride in being on part of the road transportation projects: *“Of course, it gives me great pride to be associated with unprecedented infrastructure project such as the ones we are working on and supervising (...): the (Thika) Superhighway, the bypasses and the Mombasa Highway. It definitely goes into my CV. The roads may not be perfect but we are doing something new to sort out the traffic mess. And changing Nairobi into the most modern city (...) in this region. Funds are coming in. Work is going on. Big things are happening. And this (...) is such exciting work (...) coming after the dull 1990s era.”*

I enquired about public participation, which was a requirement for public projects in the new Constitution of Kenya. The engineer said that the Kenya National Highways Authority had announced meetings through the daily newspapers in order to get the opinions of stakeholders and community representatives but only a few showed up. He added that communities only began complaining during the construction of highways and became more vociferously after the practical completion of the highways. He

⁵³ According to the Laws of Kenya, specifically the Engineer's Act of 2012, it is a legal requirement for foreign engineers or foreign engineering firms wishing to undertake engineering projects in Kenya to be (temporarily) registered in Kenya for the duration of their project(s). For purposes of this registration the foreign firm must have a shareholding structure of which 51% belongs to Kenyan citizens. To satisfy this requirement foreign firms are compelled to collaborate with Kenyan registered engineers or Kenyan registered engineering firms on projects built in Kenya.

admitted that there had been critical flaws and omissions in the highway design. But to correct them they (the Kenyan engineers) had demanded changes to the THIP design without “*too much variation*” to construction costs. He gave me the result of their demand for design changes, inter alia, as the inclusion of footbridges across the Thika Superhighway. I asked about what would happen if the views of the public on the new highway were in direct contradiction either with each other or with the interests of the politicians. The engineer replied, “*We try to avoid politics as much as possible. Our work is to design roads, bridges and highways. We are not trained in politics. But if there (were to be a) conflict in the process of public participation we will (be compelled to) do what the politician wants. This is justifiable given that it is the same people (that we ask to participate) that elect politicians. So we take it that they (...) represent the people. And since they are (duly) elected they have the legitimate power to make decisions on behalf of their people.*”

The role of politics in the planning of road transportation infrastructure is indeed undeniable. Road transportation infrastructure is conflated in the economic pillar of the Kenya Vision 2030 document which outlines what are considered by an elite group appointed by the President of Kenya as flagship projects. To realise the identified flagship projects the Government of the Republic of Kenya established what, on paper, are autonomous agencies. For the road infrastructure sector the Kenya National Highways Authority (KeNHA), established under the Kenya Roads Act of 2007, is the body that is in charge of national roads. The two largest road infrastructure projects from which four out of the five case studies are drawn are national roads. As per the Laws of Kenya, KeNHA’s core functions include:

- (1) Constructing, upgrading, rehabilitating and maintaining Class A, B, and C roads⁵⁴.
- (2) Implementing government policies relating to national roads.
- (3) Ensuring adherence to the rules and guidelines on axle load control prescribed under the Traffic Act and any regulations under this act
- (4) Ensuring that the quality of road works is in accordance with such standards as may be defined by the Minister or Cabinet Secretary appointed by the President of Kenya to head the Ministry of Roads or Ministry of Public Works⁵⁵.

⁵⁴ Class A roads are international trunk roads linking centres of international importance and crossing international boundaries or terminating at international ports, Class B roads are national trunk roads linking internationally important centres, and Class C roads are primarily roads linking provincially important centres to each other or the two higher-classroads (Class A and Class B roads).

⁵⁵ Roads have come under the jurisdiction of different ministries and different government departments; this chiefly depending on the whims of successive governments.

(5) Collecting and collating all data related to the use of national roads as may be necessary for efficient planning under the Traffic Act.

Within KenHA's mandate is the employment of registered civil engineers, registered civil engineering firms and registered contracting firms for purposes of designing, constructing, maintaining and rehabilitating roads under its prerogative. The employment of civil engineers is done in accordance with criteria such as a degree in Civil Engineering, registration with the Engineers Registration Board, work experience, possession of communication and interpersonal skills, knowledge of computer technologies and software used in roads planning and management systems, and knowledge of project management. The specific duties of a civil engineer employed by KenHA (at different cadres of responsibility) include:

- (a) Undertaking planning, designing, and construction or maintenance of road projects.
- (b) Organizing and preparing tender documents of road projects.
- (c) Preparing procurement plans for road development projects.
- (d) Assisting in the preparation of Annual Works Programs.
- (e) Participating in design, construction and maintenance activities.
- (f) Supervising road construction and maintenance activities.
- (g) Ensuring road construction projects are executed in accordance with standards and specifications.
- (h) Attending site meetings and handling project matters as per contract.
- (i) Monitoring and reporting progress of works.
- (j) Performing any other duties as assigned by their superiors.

KenHA also employs surveyors to directly work with civil engineers on road projects. The qualification of surveyor for employment at KenHA include such criteria as a degree in Surveying and Photogrammetry or equivalent qualifications, membership of the Institute of Surveyors of Kenya, work experience, knowledge of computer technology and software used for roads planning and project management systems, and public relations and interpersonal skills. The duties of surveyors employed by KenHA include:

- (a) Preparing annual survey work plans.

- (b) Performing surveying, mapping and GIS functions e.g. engineering surveys, cadastral surveys, and road reserve surveys.
- (c) Preparing and providing accurate survey data in digital form for feasibility studies and final road design.
- (d) Preparing specifications and Terms of Reference for survey work to be undertaken by surveying consultants.
- (e) Supervising surveying consultants engaged by the Authority.
- (f) Supervising civil works during construction.
- (g) Liaising with other departments, ministries and other agencies on surveying matters.
- (h) Preparing periodic and ad-hoc survey reports.
- (i) Planning, coordinating and facilitating the preparation of survey documents for the acquisition of title deeds for the Authorities' properties and road reserves.
- (j) Formulating administrative and operational procedures concerning surveying and mapping
- (k) Preparing specifications and terms of reference for survey works to be contracted out.
- (l) Evaluating and certifying work submitted by consultants.
- (m) Overseeing accurate mapping of roads, road reserves and road related features in digital form and maintaining road records arising therefrom.
- (n) Performing any other duties as assigned by their superiors.

KenHA also evaluates design and construction bids and commissions contractors or contracting firms for various national road projects. Since 2000, national road transportation infrastructure projects have been won by foreign engineering consulting firms, and foreign contractors or contracting firms. In such cases contracts have been accompanied by grants or loans for construction from foreign governments. Chinese contracting firms have been particularly active in the construction of Kenya's road projects. The THIP and the Mombasa Highway Improvement Project (MHIP), both under the aegis of the Kenya-Northern Corridor Transportation Improvement Project (KNCTIP), have been constructed by Chinese contractors with the backing of the Exim Bank of China, the World Bank and the AfDB.

Even though national roads link important urban centres KenHA does not employ or seek advice from design consultants in the field of urbanism—such as urban planners, urban designers, sociologists, urban geographers and so forth (see page 112, footnote 49).

The rigid terms of employment of technical staff at KenHA make it clear that transdisciplinary collaborations and transdisciplinary knowledge of the broader urban context is considered not to be essential to the appropriate design of road infrastructure. The organization of KenHA, with its clear reference to the Minister/Cabinet Secretary in the Ministry of Roads or Ministry of Public Works or Ministry of Transportation and Infrastructure (whichever is in charge of road transportation infrastructure at the time) as the sole custodian of standards of national roads design assumes that political appointment is sufficiently representative of public participation as stated by the engineer working at APEC Consortium Limited. The subsequent design of roads (and road space) is seen as a set of clear-cut technical problems rather than a set of wicked multi-faceted problems. However, what matters is the everyday working of the road. Does the organisation of politics and planning, the conventions of engineering design, the poor sharing of project information with the public and the tools employed in the design of roads produce good design. Or does the real world—everyday life on the streets and highways of Nairobi before, during and after the transformations—show that planning, design and implementation processes are, at best, anachronistic?

4.7 OVERVIEW

Rosalind Williams (1993) states that: “the outstanding feature of modern cultural landscapes is the dominance of pathways over settlements, ...the pathways of modern life are also the corridors of power, with power being understood in both its technological and political senses. By channeling the circulation of people, goods and messages, they have transformed spatial relations by establishing lines of force which are privileged over the places and people outside of those lines.” By this assertion, infrastructure networks cannot only be understood as a purely functional product but as a product that displays different types of power: the power of the built environment over the unbuilt environment, the power of humanity over nature, and the socio-political power of the ruling classes over the rest of society (Williams, 1993).

The display of power and politics in physical networks is palpable in Nairobi with roots that go as far back as Kenya's independence era. Notably, the first major student protest in this era (on 12th, February 1963) at the University of Nairobi happened over students' demand for a pedestrian tunnel to be constructed under Uhuru Highway to link the main campus with the students' halls of residence (Omari and Mihyo, 1991). Students

contended, then, that motor vehicles should stop for them to cross the road safely rather than them having to be watchful in order to cross the road⁵⁶. They felt that vehicular speeds on Uhuru Highway made it unsafe and inconvenient to cross the roads. But the perception of road transportation infrastructure transcends demands for pedestrian safety within the city. Since the 1970s Kenyan politics and governance have been characterized by scandals of various types. These scandals have been the reason behind Kenya's consistent low ranking in Transparency International's Corruption Index⁵⁷. Chief among these scandals are those connected with the construction of infrastructure. Corruption in the Ministry of Public Works and in the Ministry of Local Government has been a direct consistent cause of non-delivery of services in the public sector or the means of squandering of public funds meant for the building of various types of infrastructure; roads, telecommunications, power lines bridges, schools and so forth. Until 2007, Kenya had some of East Africa's poorest roads (Wasike, 2001). The public frequently complained in the local media about the poor state of roads in spite of paying taxes to the government. In the early 1990s, political change began with the struggle against the dictatorial single-party politics of the Moi government which was largely based on political sycophancy, patronage and corruption. This led to a change in the constitution allowing multiparty politics in 1991 with the first general elections held in 1992⁵⁸. However, very little changed in the way that the government ministries were run: political power was still centralized in the executive arm of the government and scandals continued to erupt sporadically within government ministries and parastatals. The increased democratic space in Kenya in the late 1990s saw increasing dissatisfaction, dissent and vociferous protests against corruption and the poor delivery of public services by the government among the public, in the local media and among eminent opposition politicians. The electorate were stirred into asking questions about what politicians had achieved in their tenure. They demanded "to see" what the government had done for them.

Following the 2007 post-election violence and in view of the recommendations of the 2008 Africa Union Panel of Eminent Personalities a new constitution was crafted and passed in a referendum. This constitution was promulgated on 27th August, 2010. The purpose of this new constitution was to effect a break with Kenya's past and create a new image for the country. A government initiative called Brand Kenya was launched

⁵⁶ The report at: <http://www.monitor.co.ug/News/Education/-/688336/1226924/-/ff0xfhi/-/index.html> (accessed on 21st May, 2014) describes the circumstances under which the first riot at the University of Nairobi happened in 1963.

⁵⁷ In the Corruption Index of 2012 Kenya was ranked 139th in the world with a score of 27 according to the transparency international website: <http://www.transparency.org/cpi2012/results> (accessed on 21st April, 2015).

⁵⁸ For a brief history and perspective of multiparty politics in Kenya, see: <http://www.cmi.no/file/?1321> (accessed on 22nd April, 2015).

to market the country as an emergent working democracy. A grand proleptic vision, Kenya Vision 2030 was adopted, as a guide to rapid economic growth and development. Long-term plans were drawn based on broad social, economic and political pillars that would serve as benchmarks for developments leading to the achievement of Kenya Vision 2030. Subsequently, large infrastructure projects were drawn up based on the economic pillars of Kenya Vision 2030. Modern infrastructure was touted as the quintessential symbol of advancement. This claim was substantiated by the push by international organizations involved in development in Africa, such as the World Bank, for African governments to prioritize the development of networks particularly transport and communication networks. In the book, *Africa's Infrastructure A Time for Transformation* (2009) the World Bank promoted infrastructure as the key to faster economic growth in Africa (pg. 44-46). It particularly noted the poor state of infrastructure, the lack of universal access to infrastructure and offered as a solution the building and expansion of modern infrastructure. In this same period bold proposals for infrastructure projects were presented to show how Nairobi could be transformed into a modern metropolis (plate 4.8).



Plate 4.10: A proleptic representation of the road transportation infrastructure of Nairobi. The manicured environment and the monumental towers of the central business district are prominently displayed from the vantage of freeways. Such visions are driven by the political ambitions of the ruling class to establish Nairobi as the economic hub of East and Central Africa and catch up, economically, with the “Asian Tigers” whose economic growth overtook Kenya’s after Kenya’s independence from imperial British rule. (Source: Nairobi Metro 2030 document, 2009)

Recent speeches read by delegations from the World Bank at government functions in Nairobi hail the government for building modern infrastructure such as the Thika Road⁵⁹. Government bureaucrats and the jet-set expatriates handling public relations on behalf of international donors, on the other hand, do not fail to mention the achievements of the Kibaki government—the most visible and most proclaimed being the Thika Superhighway⁶⁰. In light of such political promotion, it is evident that visible road expansion projects are the product put forth to the citizens of Kenya as the government's boldest show of successful and modern development and a source of “national pride”.

I posit that the modern infrastructure model persists in Nairobi because of the nature of politics and its impact on institutions and class relationships. Institutions that design and implement infrastructure projects are structured to deliver specific politically correct (rather than socially-sensitive and environmentally sound) solutions for urban planning and infrastructural development. This can be seen in the way built environment professions—planners, architects, landscape architects, engineers, and quantity surveyors, are still legally separated with each dominating a domain corresponding to a compartmentalized element of urbanism. Within each profession there exists a regimented power structure that corresponds to the bureaucracies of the government. With the tenure in Kenya's democratic politics being fixed, the design and realization of infrastructure projects is oft exigent with choices predicated on the quickest means of planning and design rather than participatory processes. The technocratic process, dominated by the socially aloof mathematical models and methods of economics and engineering, combined with token public participation, are adopted for infrastructure projects such as the road transportation improvement projects under discussion.

⁵⁹ See for example the speech of the head of the UN-Habitat in an address on World Habitat Day, 2012, on http://www.unhabitat.org/downloads/docs/6056_80916_URBANIZATION_CHALLENGES_AND_OPPORTUNITIES_IN_KENYA.pdf (accessed on 12th June, 2013).

⁶⁰ See an example of such ingratiating commentaries at: <http://www.afdb.org/en/news-and-events/article/afdb-funded-thika-superhighway-a-masterpiece-for-east-africa-a-national-pride-president-mwai-kibaki-9986/> (accessed on 4th July, 2013).

Chapter 5

5 OUR WAY: EVERYDAY LIFE AND THE REFRAMING OF NAIROBI'S TRANSFORMED ROAD TRANSPORTATION INFRASTRUCTURE.

5.1 A KINETIC EXISTENCE

“You cannot deny a lived experience. When someone says they feel cold, you cannot say to them, no you do not.” –Chanyado

In chapter 4 I discussed the way that the planning and transformations of infrastructure have resulted in reinforcement of Nairobi's underlying segregationist structure. This structure, since its conception and implementation during the colonial times has, essentially, been employed in marginalising a majority of urban dwellers. In this section I discuss specifically how (informal) adaptations constitute the reframing of Nairobi's metropolitan space to reflect sharpening class divisions and spatial relationships between land uses and emergent road transportation infrastructure patterns. So just how does the urban majority in African cities reframe urban space planned by the state? Myers (2003: 132) provides a clue when he argues that,

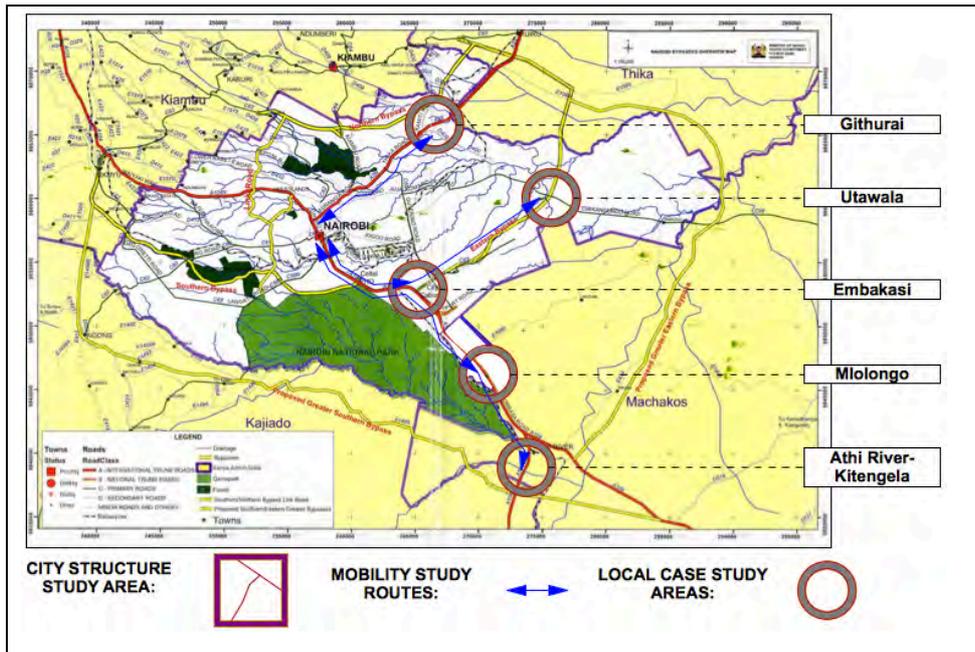
“(…) State power in postcolonial Africa often shapes and manipulates the urban landscape in an ideological manner as part of its struggle for an enframing order, often replicating colonial tactics in the process. It has become common to speak of the landscape as a geographical text bearing the political and ideological impress of the state, but we must recognise that these geographical texts are often read very differently than the state intends in the everyday spatial language of the less powerful. Those on whom such texts are presumed to be written are themselves active and assertive agents in the defining and redefining of spatial boundaries and cultural markers.”

This suggests that informality is closely associated with infrastructure networks built in the landscape. It is a well-established fact that informal settlements occur on public land, marginal land or on land whose ownership is disputed (Hansen and Vaa, 2004, Rakodi, 1997). The construction of roads, railways, electric power lines and telephone lines usually annex reserves of land or easements along them. These easements are not demarcated in any other way except by the erection of boundary walls and fences on adjacent private properties. This unclaimed space is usually the inevitable resort of marginalized and displaced groups in the Nairobi Metropolitan Region. It is estimated that roads, highways, parkways and all infrastructure dedicated to cars consume up to 50% of all urban land in sprawled cities (Arbury, 2005, Duany et al., 2000). Therefore networks of various types, railway tracks, swales and so forth, in totality may constitute more than half of all urban land. Given that networks are most often contiguous to public land, it is not uncommon to find informality located within networks themselves. Rahul Mehrotra has defined the emergent dynamic urbanism as the kinetic city (Ruby et al., 2008). In sub-Saharan cities hawking and vending of goods occurs on city streets and intersections. Stalls and temporary shops are most often located adjacent to public transport stops (Anyamba, 2006). Hansen and Vaa (2003) in their account of the sociopolitical intrigues of street vending in Lusaka, Zambia state how market sellers were displaced from the streets in downtown Zambia in 1999 only to relocate to a new

location under high power electric pylons. In informal settlements, electric power and water lines are illegally tapped from the main supply lines. So the expansion of existing infrastructure networks affects urban processes in different ways that lead to contestations in space; activities are displaced, reconstituted, relocated or actively invade the spaces of physical infrastructure through creative adaptations (Hansen and Vaa, 2004).

5.2 OUR WAY OR THE HIGHWAY?

In this section I describe and assess the characteristics of the spatial transformations of road transportation infrastructure networks and how people adapt road space to suit their own everyday needs or the needs of their communities. I observe, map, and interview the occupants of five selected locations/intersections along transformed highway infrastructure. This mapping relates spatial adaptations, specifically the nature and structure of activities, to the time and the persons involved in these activities, why they choose their locations, and how they believe they make it work for them. The selected locations for these studies are Githurai, Embakasi, Mlolongo, Athi River-Kitengela, and Utawala (see map 5.0).



Map 5.0: A map of part of the Nairobi Metropolitan Region showing the case study areas. (Source: Author)

These locations are selected because (1) they show varying degrees of adaptations to transformed road space from impermanence⁶¹ and spontaneity to outright invasion or reinvasion, (2) the physical transformation of the highway varies from relatively minimal transformation to extremely radical transformation, and, (3) they are relatively diverse in terms of the activities they contain: residential, industrial, institutional and commercial as well as diverse informal activities⁶².

In each of the locations identified I made a portfolio of drawings and photographs detailing the physical transformations of road transportation infrastructure. I mapped the location and frequency of activities at various scales inspired by Lefbvre's Rhythmanalysis and by the use of space-time diaries. I identified spatial and temporal patterns and established the reasons behind them through a set of two interviews; one of stationary subjects and the other of subjects moving through (along and across) the highway using various modes of transportation.

5.3 CASE 1: GITHURAI

"If you drive north-east from Nairobi, aiming for Mount Kenya, it takes a while to shrug off the city slums. Traffic slows to a crawl while doing its best not to stop entirely at Githurai roundabout, notorious for cut-throats and thieves, then bombs in relief down the Thika road. Some of the worst accidents in Kenyan history have occurred on this stretch of road, but few drivers let that deter them. Ordinary cars compete with crammed matatus, yellow jerrycans bobbing from roof racks like party balloons, to see who can flirt most outrageously with death while remaining on the road." (Wrong, 2009: 99).

Githurai is a settlement located in Nairobi's Kasarani Division. It accommodates an estimated population of 525,624 and an average population density of 9,720.77 people per square kilometre according to the Population and Housing Census of 2009 (Kenya National Bureau of Statistics, 2010). It is located 18 kilometres northeast of Nairobi along the Thika Superhighway and 21 kilometres from Nairobi along the Nairobi-Nanyuki railway line. It is the first township after Nairobi along the Thika Superhighway. In the colonial era the British established the Templer Barracks in a place called Kahawa in the, then, Central Province. Kahawa is located along the former Fort Hall Road on the way to Fort Hall (present Murang'a town) where the British had

⁶¹ The term "impermanence" as used here is used in the manner described by Bishop and Williams (2012) as "living in extreme and challenging uncertainty." In their elaboration of this definition they say impermanence is characterised by temporary structures –built of material more prone to environmental decay relative to (legally prescribed construction materials), temporary or illegal activities and impromptu and often inadequate infrastructure.

⁶² Olima (2001) argues that in Nairobi it is virtually impossible to clearly distinguish the functional areas of the city. Informal activities are highly differentiated physically, and socio-economically heterogeneous.

set up their frontier for colonial expansion into the arable lands around Mount Kirinyaga to the north of Nairobi (Wrong, 2009). Within the precincts of these army barracks were built residential housing for army officers of various cadres including quarters for their African domestic staff. Over time the barracks community began trading with local farmers immediately to the south of their barracks along a fertile river valley where the farmers grew food crops and battered them with the pasoralists from the Kaputiei Plains. An informal market, Githurai, was established here⁶³.



Map 5.1: A satellite map showing the Thika Superhighway after the transformations and local landmarks. (Source: Google Earth)

In 1965, after Kenya's independence, the British Government handed over the Templar Barracks to the Kenya Government (Ogot, 2003). The barracks were renamed Kahawa Garrison. A portion of the barracks was converted to house the newly-established Kenyatta College; a constituent college of the University of Nairobi (Ogot, 2003). Thereafter, Githurai continued to grow into the early 1980s as a roadside market and shopping centre for indigenous resident communities at the Kenyatta College and at the Kahawa Garrison. It expanded as an informal mixed-use settlement linearly along the roadside *matatu* (local transport bus) terminus and across the intersection of the Ngumba Road and the former Thika Road (now Thika Superhighway).

In the late 1990s, following the era of Structural Adjustment Programmes (SAPs) in Kenya (Adepoju, 1993, Rono, 2002), but, before the former Thika Highway was

⁶³ Historically, Githurai and Ruiru were market towns for farmers from as far as the Aberdares and the Mount Kenya slopes where barter trade would take place between them and the pasoralist communities in the Kaputiei Plains. See a discussion of these origins at <http://www.nation.co.ke/news/Its-not-business-as-usual-on-new-road/-/1056/1616500/-/dgiy8q/-/index.html>

transformed into the Thika Superhighway, the informal market sprawled into the centre of the intersection at the roundabout. This was occasioned by the rise in the number market traders⁶⁴ as well as the rise in population of the residential areas in Nairobi's Kasarani Division at Kahawa West, Roysambu, Zimmerman, and Mwiki. This intrusion into the road by market traders (and their customers) made the roundabout the primary site of spatial contestation at Githurai. Before 2010 when Kenya's administrative units were constitutionally changed, the Central Province administration located at Kiambu from time to time sought to drive informal traders out of the roundabout for safety reasons usually after fatal accidents⁶⁵ such as those described by Wrong (2009). Vehicular traffic into the roundabout was often slowed down by the intrusive activities of the abutting informal roadside market⁶⁶, by private automobiles whose drivers stopped by the roadside to purchase produce from the sellers at the market, and by the partial obstruction of the road by *matatus* picking up passengers from the bus stop.

The township grew informally from scattered small-scale agricultural farms and makeshift market stalls into an agglomeration of temporary structures along Thika Road. As the township prospered in the 1990s and 2000s commercial buildings along the highway rose to four or five storeys and were constructed of more permanent materials. The corpus of buildings at Githurai today comprises residential tenements, mixed-use buildings typically with stores on the ground to second floors, restaurants, bars, retail outlets, kiosks, open-air garages, wood and metal workshops, hardware stores, supermarkets, banks, shops, churches, and schools. The township grew into a trading hub for supplies of building construction materials for the informal settlements on the eastern wards of the Nairobi City County even as the expansion of Nairobi's residential neighbourhoods to the east leapfrogged beyond Githurai into the former Central Province.

The growth of Githurai is tied to the transformations of the Thika Highway at the crossroads that it straddles. The centre of Githurai falls at the roundabout that defines the intersection of the Thika Superhighway, Ngumba Road that serves the residential

⁶⁴ This increase in market traders from the mid-1990s correlates to the retrenchment of civil servants by the Government of Kenya as a requirement of the World Bank's SAPs (Rono, 2001). The loss of jobs in the formal sector as a result of the decline in disposable incomes resulted in an increase in informal trade (Adepoju, 1993).

⁶⁵ These accidents happened after buses or *matatus* lost control and plunged into informal traders operating within the roundabout as happened on 31st May, 2015 according to <http://www.the-star.co.ke/article/thika-accident-death-toll-rises-10#sthash.YIfisaq7.dpbs> (accessed on 1st June, 2015).

⁶⁶ During the course of my studies as an undergraduate student at the Jomo Kenyatta University of Agriculture and Technology between 1997 to 2012 I used the Thika Highway every fortnight or so to travel to Nairobi via *matatu*. The roadside market sellers at Githurai displayed their merchandise on the pedestrian path abutting the highway in effect displacing pedestrians onto the vehicular path and partially obstructing vehicular movement. The organic and plastic waste from the market was discarded onto the highway. Left uncollected by the local authorities this waste would further drive pedestrians to step into the vehicular path near the Githurai 45 roundabout.

areas of Githurai 44, and the Mwihoko Road that serves the residential areas in Githurai 45 and Mwihoko. Other roads within the local area ultimately converge to this intersection. The growth of the township to the north is restricted both by the railway and by the perimeter fence of the Kahawa Garrison. Land use is mixed including residential, commercial, agricultural and public land.

5.3.1 The physical transformations of the Thika Superhighway at Githurai

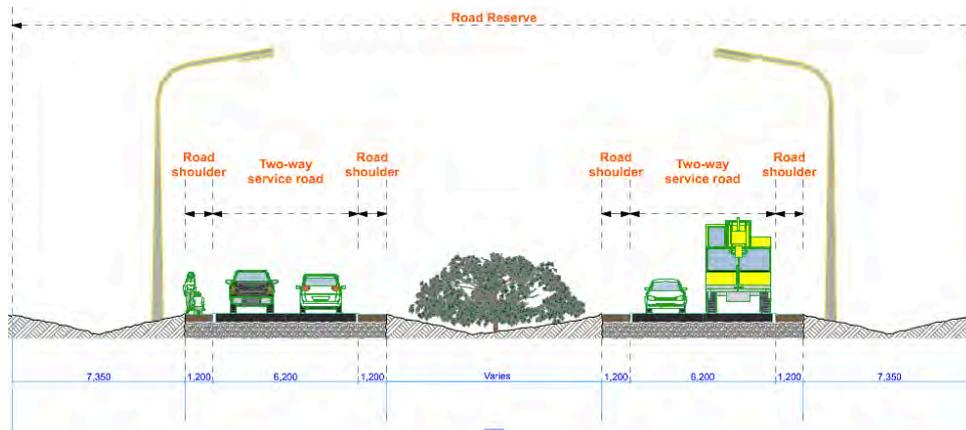


Figure 5.0: A typical cross-section of the Thika Highway before the transformations. (Source: Author)

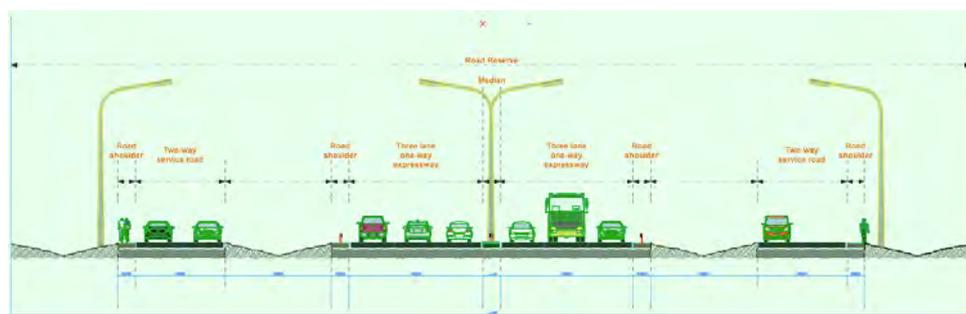


Figure 5.1: A typical cross-section of the Thika Superhighway after the transformations. (Source: Author)

The transformation of the Thika Highway at Githurai involved the replacement of the four-lane dual carriageway with a ten-lane lane dual carriageway. The ten lanes comprise of a six-lane dual expressway and two lane service roads on either side of the expressway accessed by exits from the expressway and serving vehicular traffic to and from local areas (see plate 5.0). At Githurai, local areas are accessed by getting off the expressway through Exit 8 and Exit 9 and entry via service roads on either sides of the expressway. Formerly, roundabouts at Githurai 45 and at Roysambu served to link the

highway to local area destinations. In the transformed highways, both these roundabouts are not removed; they are reconstructed anew. The six-lane expressway is raised approximately 9 metres above the two roundabouts by overpasses supported by concrete columns. The overpasses taper into alignment with the natural topography through concrete retaining walls in-filled with compacted hardcore. The road is separated into sections through galvanised steel crash barriers and median barriers with galvanised steel distance spacers. Stretches of the median, 1 metre and wider, are planted with assorted ornamental grasses and shrubs. Along the service roads are 3 metres wide concrete pedestrian walkways with sets of concrete bollards at crossings to prevent vehicular access into them. Streetlights on galvanised steel posts are installed the centre of the median so as to light both sides of the expressway. Streetlights on galvanised steel posts are also installed along as well as on the pedestrian path to light the service roads. Storm drains are constructed between the expressway and the service roads.



Plate 5.0: The transformation of Thika Highway into the Thika Superhighway. (Source: skyscrapercity.com)



Plate 5.1: A picture showing the overpass at Roysambu along the Thika Superhighway after the transformations. (Source: M. S. Kimunyu)



Plate 5.2: A picture showing the retaining wall supporting the expressway overpass at Roysambu along the Thika Superhighway after the transformations. The prior visual connection between the opposite sides of the highway is lost. (Source: Daniel Thuku)

Between Githurai 45 and Roysambu two footbridges, the first near Kenya Tents Limited and the other near the Kenya Clay Works Factory, are provided to allow pedestrians,

cyclists, handcart operators and domestic animals to cross the expressway. The footbridges are constructed of reinforced concrete ramps and staircases, supporting steel girders covered with blue Perspex sun-shading and steel stanchions anchored onto reinforced concrete pad foundations. It is also possible for pedestrians to cross the road at the Roysambu roundabout and the Githurai roundabout where pedestrian crossings were painted onto the highway in August 2012, several weeks before the practical completion of road works. In October 2012, traffic signs including road safety signs and gantries with groups of directional signs were erected at various points along the highway.



Plate 5.3: Crowds gather near the Thika Highway at Githurai On 5th November, 2008 to collect recyclable waste (such as rebar and stone) after the demolitions of structures and buildings to make way for the 10-lane expressway. (Source: The Daily Nation, 11th September, 2010)

During the pre-construction phase structures were demolished to make way for the new highway. From 2nd November 2008 along the stretch of Thika Highway extending from Githurai 45 to Muthaiga several established businesses notably, Roy Transporters, Kenol Service Station, Visions Restaurant, and Nakumatt Thika Road branch, were brought down, usually without prior notice, by Ministry of Public Works bulldozers. During the construction phase, no provisions were made for pedestrians or vehicles to

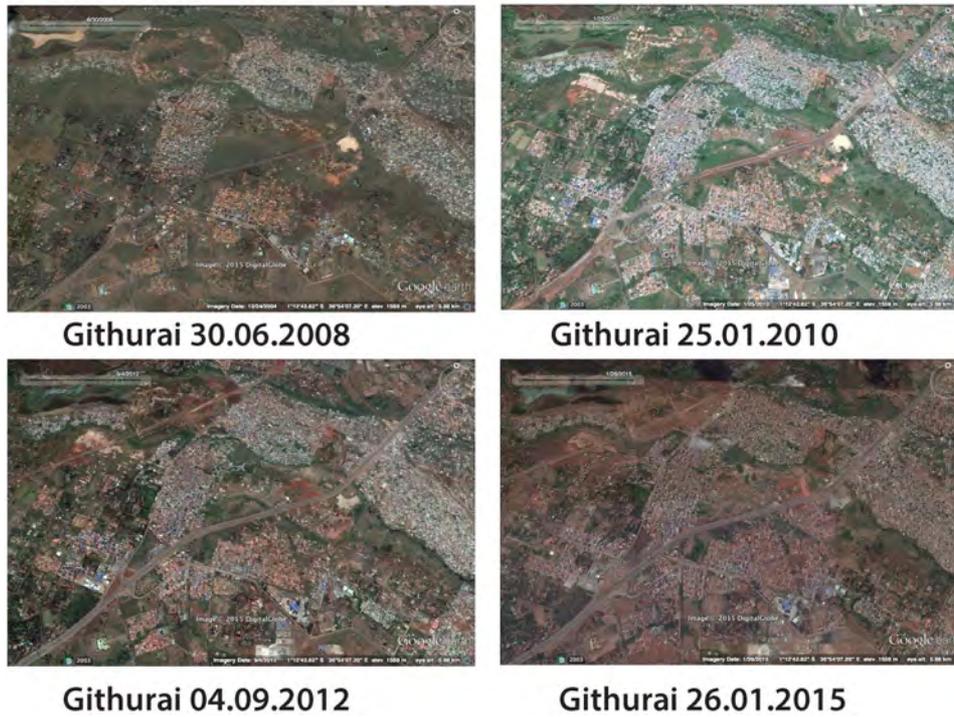
cross the works sites. It was confusing and difficult to access some local areas as local roads were blocked neither notice of the blockage to communities living adjacent to the highway nor required directional signs to indicate new routes to places along the highway.



Plate 5.4 Pictures of Thika Highway at Githurai during the construction period on 10th April 2011 showing the ensuing disruption, confusion and conflicts among traffic modes. (Source: Liz Muthoni and Thika Road Blog).



Plate 5.5 The everyday chaos and confusion of pedestrian and vehicular circulation at the Thika Highway during the construction period on 10th April 2011 (Source: Liz Muthoni and Thika Road Blog).



Map 5.2: Satellite maps showing transformations of the Thika Highway at Githurai since 2008. **Githurai, 30.06.2008:** The pre-construction stage showing the old four lane, one way dual carriageway. Activities, then, were distributed more evenly along the highway and entry into local areas relatively unrestricted. Demolitions of structures and buildings located within the road reserve were eminent: they were carried out that November. **Githurai, 25.01.2010:** The construction stage period of displacement and disruption showing the earth road diversions next to the highway. The ongoing erasure of existing roundabouts can be seen at Roysambu and Githurai 45. **Githurai, 04.09.2012:** The construction period showing the addition of footbridges after public outcry following increases in both road accidents and pedestrian deaths. This period also saw an increase in the density of buildings along this stretch of highway while activities congregated about intersections, bus-stops and footbridges. **Githurai, 26.01.2015:** The completed six lane, one way dual carriageway flanked by two lane, two way service roads. The completion of footbridges at Kasarani, Roysambu and Clayworks saw the intensification of traffic and activities at intersections, bus-stops and footbridges. (Source: Google Earth) *See Appendix D for larger images.



Plate 5.6: A view of the Githurai roundabout from the Kahawa drift showing the new physical elements of the 10-lane highway at this intersection. The 6 lanes of the expressway serve through traffic and are elevated above the roundabout in the background. Two-way service roads accessed from exits from the main highway connect the local area. (Source: fountainnews.co.ke)



Plate 5.7: A view of the roundabout at Roysambu from the Roysambu footbridge showing the new physical elements of the highway and service roads at this intersection. (Source: Z. Mutunga)



Plate 5.8: The Githurai overpass and roundabout after the transformations. Pedestrians needs were often last to be addressed and they became the most neglected and vulnerable of highway users. (Source: Author)



Plate 5.9: The Roysambu bus stop and the Roysambu footbridge along the Thika Superhighway after the transformations. Such footbridges serve all other non-motorised transportation modes including domestic animals. (Source: Author)

5.3.2 *The reframing of the Thika Superhighway at Githurai*

In the pre-construction period before the demolitions of roadside structures in November 2008, informal activities stayed put along the highway at bus stops, road reserves, pedestrian paths and informal markets. Then as demolitions took place, a crowd of residents of Githurai would be at the sites of demolition to collect recyclable waste such as the steel reinforcement bars embedded in reinforced concrete rubble, roof tiles, wood, stone and bricks. They would scramble particularly for the reinforced concrete rubble. They would then use hammers to break the concrete in order to get the steel reinforcement bars to sell to scrap metal dealers or to *jua kali* (informal sector) artisans. James Maina, one of the residents of Githurai 45 revealed that he and other residents would use part of the materials from the demolitions to craft basic domestic products to sell and also for their own personal use. The informal market at Githurai 45 also remained active even as demolitions continued to affect the buildings around it. During the construction period, market activities would only move to give way to construction at specific point and would match the movement of pedestrians in the construction zone. These activities would be set up once more when construction moved to a different area. Wangechi Mugure, a vegetable seller on the pedestrian path at Githurai 45 pointed out that the majority of vegetable sellers depend on sales to pedestrians at the informal roadside market in order to make ends meet. They therefore would not give way to road construction as their daily lives depended on daily sales of vegetables at the roadside market. She said, *“My children and I depend on this business. I pay all my bills from this business. I cannot move (from here) even for a day as my livelihood depends on interacting with my customers who are people passing here to get to the bus stop or to their houses. This location is the best for attracting attention to my products and convincing my customers to buy my vegetables.”*

Immediately after the completion of the road in June 2012, informal activities sharply expanded and invaded the spaces below the overpasses and the in the pedestrian bridges. Again, these activities matched the patterns of circulation of pedestrians crossing the highway at the new bridges and at the roundabouts but were more intense. More market sellers displaced from other sites along the road joined the other market sellers at the Githurai 45 roundabout and at the Roysambu footbridge. Mary Gathoni, one market seller said that she had been displaced from her selling site at Ruaraka and had resolved to come to Githurai in order to keep earning a living. And so far she was making more money at the roundabout than she had made at Ruaraka. She said that there were more people here in Githurai than there had been at her former location in Ruaraka. On the Roysambu footbridge, a seller of second-hand clothing wishing to remain anonymous hung her merchandise on the underside of the ramp supports. She claimed too that in that location she could get customers from passengers boarding or alighting from public transport at the Roysambu stop. On the opposite side of the

footbridge, there were many more traders sheltering from the heat of the sun under parasols. Ndungu Wachira, a fruit seller said that the location was profitable as it was the focus of daily pedestrian movement. At Githurai 45 traders brought their products and services to the roundabout and displayed them in carts, pickup trucks, cartons, demountable racks, crates, and sacks, and polythene bags. They lined them along the pedestrian crossing under the overpass adumbrating a footpath next to the vehicular path. Others arranged their display within the roundabout to allow for pedestrian movement between their products. A strong spatial pattern emerged from the relationship between pedestrian movement and highway crossing, public transit stops and the location of informal trade. The design of the new highway was restrictive with regard to bus stops and crossings for pedestrians, creating spatial inequalities with regard to access of informal traders to potential consumers and limiting opportunities to the places where circulation and access to both sides of local areas was confined. I observed that whereas the distribution of informal activities had been more spread out along the highway at Githurai, after the construction period they became more concentrated at the overpasses and the footbridge areas where both pedestrian and vehicular crossing had been confined.

In the period after the construction of the road I witnessed pedestrians—including school children—run across the highway at undesignated sites. Though the road was completed in June 2012, footbridges for pedestrians were completed later in August 2012. On October 15th 2014, when I walked along the length of the study area long after the pedestrian bridges had been completed in a time period of 30 minutes I counted 61 incidents of pedestrians jumping over the crash barriers and running across the road at undesignated crossing points in some cases, such as at the footbridge at Kenya Clay Works Limited, immediately in sections of the highway right next to a footbridge or walking within the vehicular path. According to reports the number of accidents on the Thika Highway involving pedestrians increased from 2011 to 2014⁶⁷.

The road configuration has created some privileged spaces and some neglected spaces. These are spaces where access to both sides of the highway has been confined and there is a slowing of traffic speeds and traffic modes. At the Roysambu footbridge, the Githurai 45 roundabout and the Roysambu roundabout I noticed the way people use these spaces as social spaces; meeting friends, talking to strangers, greeting, politicking, resting, sheltering from the rain and the heat of the midday sun and selling products. At

⁶⁷ According to Usalama Watch Initiative, a road safety NGO, pedestrian deaths along the Thika Superhighway had increased because pedestrians were avoiding using the footbridges. The Usalama Watch Initiative launched a road safety campaign on 30th October, 2014 to encourage pedestrians to use footbridges. These two reports describe the pedestrian safety on the Thika Superhighway: <http://www.nation.co.ke/News/Time+to+stop+avoidable+deaths+on+killer+highway+/-/1056/1396002/-/u9vfe/-/index.html> (accessed on 15th May, 2014) and <http://www.nation.co.ke/counties/nairobi/Thika-Road-safety-campaign/-/1954174/2505058/-/view/printVersion/-/celfwd/-/index.html> (accessed on 29th June, 2015).

the Githurai 45 roundabout I observed the social role of the pedestrian footpath in the roundabout in the use of the retaining walls inside the roundabout as a community noticeboard. The retaining wall was used to announce community events of different kinds from by a variety of community organisations. The neglected spaces on the other hand have garbage thrown onto them. The ground next to the retaining walls bordering to the service road, at their highest point, were littered with trash and were avoided by pedestrians.

The failure to provide paths for handcarts and donkey carts has resulted in the use of the service roads by these modes of transport. The vehicles that use these roads and access local areas give way to handcarts and donkey carts. However, there are still some conflicts between different modes of transport and the market sellers invading the road. The use of space is negotiated on a daily basis but certain groups—like the clothes sellers, cart pushers and fruit and vegetable vendors—organise their spaces next to each other for complementarity and cooperation. I also observed that the expressway rather than the service road is the site on which conflicts in the community are most vigorously expressed. During my study, two protests were held on the Thika Superhighway at Githurai. In both cases residents chose to block the expressway rather than the service road. During these protests residents barricaded the expressway using the elements from the expressway itself—such as concrete slabs and crash barriers—rather than those from the service road.



Plate 5.10: A picture showing the agglomeration of activities at the Githurai overpass along the Thika Superhighway after the transformations. Though the scene looks crowded and disorganised I found that space is negotiated and activity is highly organised. (Source: Nicholas Kipchumba)



Plate 5.11: A picture taken in June 2012 showing products on sale at an informal market under the overpass along the Thika Superhighway after the transformations. Some of the products are fabricated from recycled materials obtained from the demolitions that took place before the beginning of road construction. (Source: Nicholas Kipchumba)



Plate 5.12 A picture showing a pattern of accretion of informal activities along the pedestrian path at the mouth of the Roysambu footbridge along the Thika Superhighway after the transformations. (Source: Author)



Plate 5.13: The retaining walls under the overpass and next to the pedestrian crossing are the community noticeboard at Githurai. Motorists and pedestrians frequently stop and wait in this area to get reprieve from the heat of the afternoon or the pouring rain of a wet day. It is an inadvertent but important social space. (Source: Author)



Plate 5.14: A picture showing the discarding of garbage along the retaining wall next to the service road at the Githurai overpass along the Thika Superhighway after the transformations. Garbage collection services are not provided at the market and this nondescript and claustrophobic space at the retaining wall is the default dump. (Source: Author)



Plate 5.15: A picture showing a handcart operator using the service road along the Thika Superhighway after the transformations. The overlooking of non-motorised transport has caused a dogged adaptation of the new highway to suit local non-motorised transportation needs. (Source: Author)



Plate 5.16: The relationship between the locations of public transit stops, informal trade and footbridges along the Thika Superhighway after the transformations is stronger. Footbridges constitute new growth nodes where they are built in close propinquity to pre-transformation road intersections. (Source: Author)



Plate 5.17: A picture showing protests on 9th September, 2014 at Githurai along the Thika Superhighway after the transformations. The protestors used concrete slabs covering the storm drains as barricades to close the road. (Source: Samuel Karanja)



Plate 5.18: A picture showing informal trade occurring inside the Roysambu footbridge along the Thika Superhighway after the transformations. (Source: Author)



Plate 5.19: The market on the highway at Githurai 45 showing the invasion of the pedestrian pavement by market sellers. Notice how this pushes pedestrians and domestic animals into the vehicular lanes. (Source: Donddon)

5.3.3 *Githurai summary*

The Githurai case study illustrates how a local historical economy and a local social setting affects road transportation infrastructure. It is a vivid example of the conflict between engineers, planners, politicians and landowners who affect design at the structural scale, and people I collectively refer to as highway communities who affect the way highways function at the architectural scale. Initially the informal trade and negotiation processes between farmers and produce suppliers, market sellers, pedestrians and public transit operators formed a major social and economic activity that defined who used the road, how the road is used and when it is used. Later when shops were built and the settlement took a more formalised plan, shopkeepers adapted their schedule of activities to this local market pattern. This adaptation is matched, even today, not just to impromptu occurrences on the highway but also to the weather patterns. For instance when it rains and pedestrians seek shelter under the overpass, hawkers are sent with umbrellas from the shops to offer to them. The market became the focal point of the Thika Highway communities as far away as Juja and Thome. Over time the roundabout, on which the market aligned, became the main social space for the community. The location of the market at the highway came to constitute a spatial pattern that works for the community at Githurai and for those who pass through it on public transport.

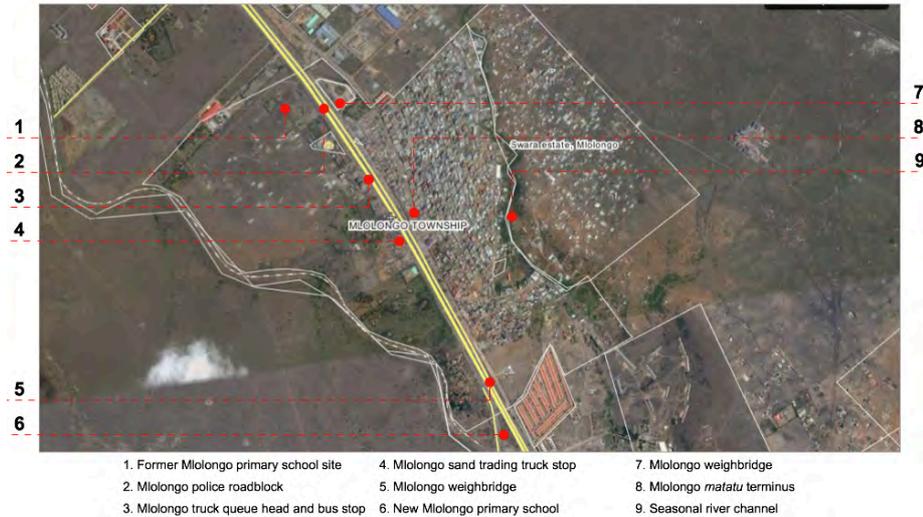
On the other hand engineering solutions that were developed solely to solve expected traffic problems at Githurai and to cater for future traffic projections largely excluded the consideration of the market as a function related to the highway. The results of this oversight can be seen in the way conflicts and inadvertent adaptations happen on, across and under the highway. The garbage at the retaining wall and at the sides of the service roads, conflicts between non-motorised transport and motorised transport and the opportunistic invasions of the highway by a throng of informal activities ranging from local transportation such as *boda boda* and handcarts, to social resting, meeting and hawking all point to a tweaking of formal design to everyday life. Even with the transformations the market still depends on road users for customers. Simultaneously, road users depend on the market for their supplies. And the social uses of the space at the roundabout continued at the location under the overpass. The way in which the township was founded seemed to be the origin of these enduring social and economic patterns.

With the old highway, people could cross the highway at any point without the help of footbridges. Once the footbridges were erected and the overpasses completed, access to both sides of the road was restricted to these official crossing areas. This generated new patterns of circulation that privileged these crossings but decimated the previous distribution of activities along the highway. Activities became more concentrated at the footbridges and the crossings. Clear spatial relationships exist between the bus stops, footbridges and informal activities, particularly where the surrounding neighbourhood is made up of a predominantly heterogeneous variety of residential housing types.

The new configuration has not only generated new activity patterns: it has also generated new social patterns. When I interviewed people I found along the highway at Githurai I found groups organised around the tackling of specific problems and the expression of local interests. There were also certain activities, such as security and access, that were organised among building owners, business owners, blacksmiths, the police, various transportation operators including handcart pushers and *boda boda* riders. There was such a strong sense of community as a result of these relationships that protests would occur on the highway if authorities were perceived to interfere with the running of such affairs in the community. A documented example of the expression of these social ties was a protest that occurred during the period of study on when a police officer, Constable Titus Musila, who was seen by many of the Githurai to be working to protect the community against rising crime was arrested for murder⁶⁸.

⁶⁸ According to a report on <http://www.the-star.co.ke/article/githurai-residents-protest-arrest-police-officer-accused-killing-suspected-thugs> (accessed on 4th February, 2015) the protest happened on the 9th September, 2014 with residents barricading the highway, harassing motorists and engaging riot police in running battles at the highway. Residents protested that the policeman had been arrested for protecting them. He had been arrested in connection with the shooting death of two brothers that according to residents were known armed robbers.

5.4 CASE 2: THE MLOLONGO TOWNSHIP



Map 5.3: A satellite map of Mlolongo after the transformations showing the Mombasa Highway and some local landmarks. (Source: Google Earth)

Mlolongo Township is the first town after Nairobi towards the direction of Mombasa along the Nairobi-Mombasa Highway. It is located 19 kilometres from the Nairobi Central Business District. The Swahili term *mlolongo* translates to the English noun “queue”. Mlolongo Township’s name and beginnings are traced to the rise of the trucking business on Mombasa Highway after the collapse of the Kenya Railways Corporation in the late 1980s. Beginning 1970s, following Uganda’s political instabilities and the subsequent breakup of the East Africa Railways and Harbours, the Kenya Railways Corporation that provided the bulk of passenger transport and goods haulage services between the port of Mombasa and Uganda entered into a steady decline⁶⁹ mostly precipitated by adverse government interference and corruption (Murunga and Nasong’o, 2007, Ogot, 2003). Consequently, in the early 1980s trucking companies began dominating the goods haulage business between Mombasa, the Kenyan port city, and the East Africa hinterland all the way to former Zaire (now the Democratic Republic of Congo). As from the late 1980s trucks hauling goods into the hinterland from the Mombasa Port would have their axle loads measured at the only

⁶⁹ According to multiple reports including those at <http://www.businessdailyafrica.com/Corporate-News/Kenyas-pathway-to-Vision-2030-blurred/-/539550/1378772/-/47onxt/-/index.html> (accessed on 2nd June, 2015), <https://www.minnpost.com/global-post/2013/10/last-days-kenyas-lunatic-line> (accessed on 3rd June, 2015), and, the Kenya National Assembly Official Record (Hansard) of 24th November, 1999, the decline of the Kenya Railways passenger and goods haulage services between Mombasa, Nairobi and the Ugandan hinterland since the mid-1980s is tied to the rise in competition from road transport beginning in the 1970s, to the building of the Kenya Pipeline between Mombasa and Nairobi in 1979, to political interference, to endemic corruption, and to the gross mismanagement of the Kenya Railways Corporation.

weighbridge in the Nairobi Metropolitan Region at Mlolongo to curb the practice of overloading. Here, on the city outskirts in the arid Athi-Kapiti Plains, there was sufficient space for 22-wheelers to make queues along one lane of the highway as their drivers waited to get into the weighbridge before the onward leg into the hinterland. These queues, at this outlier location relative to the Nairobi city centre, would not obstruct the usual rush hour traffic on Nairobi's arterial roads. Here too, sand trucks from the *Ukambani* region (comprising the former Eastern Province) delivering sand to builders and developers in Nairobi's booming southern estates would stop their journeys at Mlolongo to avoid paying taxes at the weighbridge. In 1988 the alignment of Mombasa Highway at Mlolongo changed after reconstruction and tarmacking. Sand traders from Machakos District, 44 kilometres southeast of Mlolongo, as well as up to 140 kilometres farther on from Mwala, Yatta, Kathiani, Masinga and Matungulu found that by dumping their lorry loads along the old alignment of the Mombasa road, about 40 metres from the new alignment, they would avoid weighbridge charges. Sand buyers in smaller and lighter trucks would arrive from Nairobi to pick sand in quantities less than 5 tons to supply it to building sites within Nairobi as they were not subject to city council taxation like the larger and heavier 10-ton trucks from eastern Kenya. As a major trucking town Mlolongo grew on the periphery without any planning. Its buildings and streets grew by an organic accretion on grabbed public land (Byamugisha, 2013). The workings of the weighbridge –particularly its time-consuming bureaucracies- and the need of the truck drivers to wait, sometimes for several days, heightened a demand in Mlolongo for such services as accommodation, filling stations, garages, restaurants, pubs, and prostitution. Initially the town was an informal settlement of ramshackle structures and temporary activities attending the melange of trucker needs arising out of the drivers having to spend time waiting to go through the weighbridge. Nonetheless, over time –funded by proceeds from the sand trade and related illegal and legal businesses, it transformed into a township of stone and concrete buildings. Residential and industrial development sprawled around it and leapfrogged into the nearby towns of Athi River and Kitengela.

Mlolongo Township today teems with supermarkets, shops, bars, restaurants, schools, churches, fuel stations, industries, a university college, a casino, brothels, cybercafés, a roadside market, a *matatu* transit terminus, banks, clinics and zones of petty trade. The dwindling supply of land in Nairobi's traditional industrial area and the proximity of the township both to Nairobi's Embakasi industrial area and to the service industries at the Jomo Kenyatta International Airport supported the sprawl of industry into the township.

The economic fortunes of the township entrenched in the undying efforts of the booming sand trade to avoid taxes have continued to play out on the section of highway traversing it. Attempts have been made by the police over the years to block the old Mombasa road to prevent sand trucks from eastern Kenya from using it to evade taxes.

For instance in March of 1996 a bulldozer dug a ditch across the old road. Two years later, in August 1998, the police erected a barrier across the road high enough for cars to pass through but too low for trucks to go through. And after the extension of the dual carriageway from Jomo Kenyatta International Airport turnoff to Athi River, in November 2014, ruts were dug by Machakos County graders along the highway median to prevent sand trucks from taking oft-dangerous illegal detours and crossing the road at undesignated points. In all these cases trucks continued to operate by finding new detours around all forms of barriers.

The Mlolongo Township did not exist on any official maps as late as 2010. Efforts at official planning did not begin to take place until 2014 when the County Government of Machakos realised how fast the township had grown and how much investment had been put into transforming the former ramshackle structures into permanent buildings. On 14th November, 2014, the President of Kenya, Uhuru Kenyatta, at the behest of the Governor of the County Government of Machakos announced official government plans to provide infrastructure and services to the township⁷⁰. Interestingly, Mlolongo Township, being by all accounts an informal settlement, never had bona fide public utilities such running water (until June 2012 when the Mavoko Water and Sewerage Company set up water kiosks in the settlement to the north of Mombasa Highway⁷¹) or a sewerage system. These utilities have, since the settlement began, been provided by landowners and the more affluent traders who fund the drilling of boreholes to supply water and construct septic tanks in each of the sites they develop. Electric power, however, is available and all permanent structures in the town are connected to the national power grid.

The land around Mlolongo is semi-arid but there is wildlife (protected within the nearby Nairobi National Park) and limestone (which a conglomeration of six cement factories mines) within the wider Athi-Kapiti Plains and Kitengela Plains. Mlolongo's unique advantages for common people lie in its location, its informality and its economy's reliance on the evasion of taxes. It is located along a stretch of highway in propinquity to a concentration of industries in the nearby town of Athi River, Kitengela, Embakasi and the Syokimau neighbourhood. Residences in Mlolongo are within walking distance of formal and informal job opportunities. Residential development in the dense central

⁷⁰ President Uhuru Kenyatta made an announcement on 14th November, 2014 promising that his government, working with the County Government of Machakos, would issue 200,000 title deeds to owners of land in Mlolongo and build a sewerage system for the town. This announcement can be found at <http://www.capitalfm.co.ke/news/2014/11/mlolongo-titles-to-be-fast-tracked-says-uhuru/> (accessed on 1st June, 2015).

⁷¹ The chairman's report to the 3rd Annual General Meeting of the Mavoko Water and Sewerage Company held on 28th February 2013 contains details of the provision of water services in Mavoko. A copy of this report can be found at: http://www.mavokowater.org/index.php?option=com_content&view=article&id=104:chairmans-report-2013&catid=34:demo-category (accessed on 31st May, 2015).

Mlolongo (as opposed to the gated communities outside this dense centre such as Valley View Estate, Great Wall Apartments, Olonyori Estate and so forth) has been achieved outside formal housing construction agencies and extraneous to legal systems (Byamugisha, 2013). It is, therefore, affordable for the majority of resident proletariats ranging from low-income factory workers to middle-level civil servants to rent a variety of housing types in Mlolongo. Mlolongo's growth continues to be backed by profits made from the sand supply and transportation business; a business whose margins of profit depend on tax evasion, corrupt deals at the weighbridge and an informal system of transactions. It is also one of the identified sites of land speculation and official collusion in scandalous land deals in the Nairobi Metropolitan Region (Byamugisha, 2013). The most noticeable physical feature on satellite maps of Mlolongo Township (see Appendix D) is how the Mombasa Highway bifurcates it into two differently built-up areas by virtue of land ownership. In Mlolongo the land to the north of Mombasa Highway is owned through leasehold titles obtained via the shady *ngwata* system of land conversion (Byamugisha, 2013) while that to the south is owned through freehold titles. Freehold ownership guarantees ownership of land in perpetuity. Landowners neither pay land rates nor other land taxes and can more readily speculate on their land. Leasehold landowners, per contra, legally own land for the time specified in the land leases of their properties. They are therefore compelled to develop it as soon as they acquire it if they hope to profit from owning it. This explains the tale of the two Mlolongos: the one with intense mixed-use development to the north of the highway and the sparsely developed one to the south of the highway. Quixotically, the expansion of the Mombasa Highway through the Northern Corridor Transportation Improvement Project since 2009 and the intensive property development in Mlolongo of the northern side of Mombasa Highway closely correlates with greater rises of values land on the underdeveloped southern side compared to the northern side.

5.4.1 *The physical transformations of the Mombasa Highway at the Mlolongo Township*

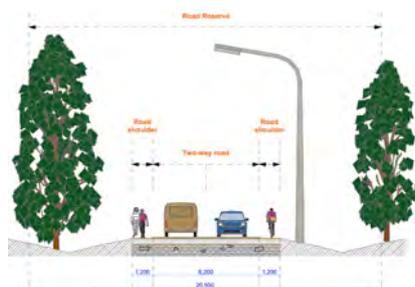


Figure 5.2: A typical cross-section through the Mombasa Highway at Mlolongo before the transformations.

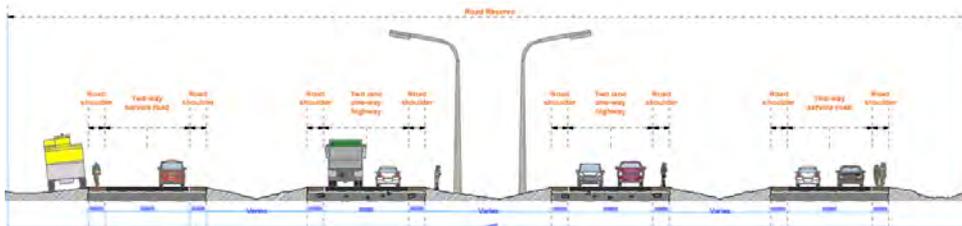


Figure 5.3: A cross-section through Mombasa Highway at Mlolongo after the transformations. (Source: Author)

The Mombasa Highway at the Mlolongo Township was a two-lane two way single carriageway before its transformations began in 2006. The expansion of the Mombasa Highway was carried out as part of the Kenya-Northern Corridor Transportation Improvement Project funded by the World Bank. Owners of structures along the highway at Mlolongo who had title deeds for their land were informed by the then Ministry of Roads and Public Works that parts of their buildings were constructed within the 110 metres road reserve. According to the then Minister for Roads and Public Works, Honourable Simeon Nyachae, the Government of Kenya in 1972 had acquired the land for the Northern Corridor at Mlolongo, from a private developer. Therefore the title deeds given to the landowners whose structures were built in the highway reserve by the Mavoko Urban Council were illegal. They were given notice to demolish the parts of their developments that encroached on the 110 metres corridor by 10th November, 2006 or have them demolished by the Ministry of Roads and Public Works at their owner's cost ⁷². This demolition affected 29 buildings in the township. Beginning October 2006, owners of affected buildings began demolishing those parts of their buildings encroaching on the road reserve. Construction of the a new four lane dual carriageway with two lane service roads on either side began in January 2007 and went on until October of 2011

The government also planned to move the Mlolongo Primary School from its former location opposite the weighbridge, down the road to its current location towards Athi River after the footbridge. The place of the primary school would then be used to build a new automated weighbridge. Though the school was moved, the weighbridge still remains in the location it was prior to the transformations. The details of the design, planning and implementation of the JKIA to Athi River highway project are scant and difficult to elicit from the former Ministry of Roads and Public Works as the planning, design, supervision and maintenance of Class A, B, and C roads falls under the Ministry

⁷² In the Kenya National Assembly Official Record (Hansard) of 19th October 2006 the then Minister for Roads and Public Works, Honourable Simeon Nyachae, gives details of the plans of the Government of the Republic of Kenya for the Northern Corridor Transportation Improvement Project.

of Transport and Infrastructure. Available documentation from the World Bank, however, shows that Louis Berger International conducted a feasibility study and some planning consultancy as part of the KNCTIP. I also came across information concerning the design and construction in a 2010 construction blog, skyscraper.com that shows that this section of the Mombasa Highway was designed by Nicholas Dwyer International and supervised by Abdul Mullick Associates Limited a Kenyan engineering consultancy firm. I verified this information on Nicholas Dwyer International's official website. During the construction the contractor, SBI International Holdings AG of Switzerland, first built the new two-lane carriageway for vehicles headed to Nairobi together with a two-way two-lane service road before diverting cars from the old carriageway, rebuilding it as the two-lane carriageway for vehicles headed to Mombasa and adding a two-way service road. Between 2009 and 2010, the section of the highway from Valley View Estate to Devki Steel Mills was closed and vehicles diverted via the Bamburi Road. On the satellite images of Mlolongo in 2010 (see Appendix D) it is possible to see just how dusty the buildings of Mlolongo Township and the neighbourhoods around Athi River became during this period. The diversion of vehicles through temporary roads scraped into the limestone rich soils of the Athi Plains led to increased dirt and dust in the air then. The contractor would sometimes get water in bowsers from River Athi and sprinkle it on these dirt diversions to mitigate the dust, but because the Athi Plains are hot and arid, the water would dry up and the clouds of dust would rise with every passing truck. After completion speed bumps were erected on the carriageway headed to Mombasa 100 metres before the weighbridge turning and also on both carriageways approximately between 100-500 metres before the footbridge. However, not a single pedestrian crossing was marked along the stretch of highway in Mlolongo.



Plate 5.20: A picture of a roadside scene at Mlolongo along the Mombasa Highway in 2000 before the transformations. (Source: Ernest Ombayo)



Plate 5.21: A picture showing the partial demolition of roadside buildings at Mlolongo on 2nd November, 2006. (Source: EGM)



Plate 5.22: Trucks queue to get into the weighbridge at Mlolongo along the Mombasa Highway after the transformations. (Source: Author)



Plate 5.23: An intersection in Mlolongo showing how the restriction of access has created the conditions for the establishment of a temporary market place on weekday evenings. Note how informal traders display products by the roadside even on parked car roofs. (Source: Sue Njeri Omollo)



Plate 5.24: An intersection at Mlolongo showing how the restriction of access has created the conditions for the establishment of an informal transit stop located within the highway median. (Source: Sue Njeri Omollo)



Mlolongo 30.08.2008



Mlolongo 30.01.2010



Mlolongo 01.01.2012



Mlolongo 11.10.2014

Map 5.4: Satellite maps of Mlolongo Township showing transformations of road transportation infrastructure since 2008. **Mlolongo, 30.06.2008:** The existing two lane, two-way single carriageway Mombasa Highway during the pre-construction period. It is flanked by the sinuous colonial era metre gauge Kenya-Uganda Railway and the boundary of the Nairobi National Park (left) and local earth access roads (right). At this point demolitions of structures within the road reserve are eminent. **Mlolongo, 30.01.2010:** The construction period started with the dualing of the existing highway. A two lane, one-way carriageway and a two lane, two-way service road are added to the south of the old highway. **Mlolongo, 01.01.2012:** The highway is completed with the reconstruction of the old highway and the addition of a service road to the north similar to the one on the south. Traffic is diverted through earth roads raising the levels of aerial dust in the limestone rich area. Building density increases to the south of the highway next to the railway and the Nairobi National Park. **Mlolongo, 11.10.2014:** The completed four lane, one-way dual carriageway flanked by the two lane, two-way service roads. The only footbridge can be seen at the bottom. It is bizzare that though this is the highway that, according to current estimates (see: http://www.economist.com/news/middle-east-and-africa/21699919-africas-new-railways-risk-going-way-old-ones-puffed-out?src=scn%2Ftw_ec%2Fpuffed_out (accessed on 4th June, 2016)), carries 95 % of goods from the port city of Mombasa to the greater hinterland, it is smaller than the Thika Superhighway (that serves central and northern Kenya) both before and after transformations. . (Source: Google Earth) *See Appendix D for larger images.



Plate 5.25: A picture of the Mombasa Highway at Mlolongo along the Mombasa Highway after the transformations showing the queue of trucks to the weighbridge. (Source: Shem Oirere)



Plate 5.26: Trucks parked on the service roads through Mlolongo along the Mombasa Highway after the transformations. (Source: Author)

5.4.2 *The reframing of the Mombasa Highway at the Mlolongo Township*

During the construction period, the reframing of the highway by residents and businesses could be seen in the way they dealt with the externalities of highway building. Building owners in existing neighbourhoods attempted to mitigate the dust

raised by diverted vehicles driving on dirt roads by constructing speed bumps on dirt roads to slow down vehicles. I observed such interventions in neighbourhoods around the Anthena School, Hillcrest Park and Delta Plains Estate and at the Bamburi Cement Factory.

In the period just before construction and during the construction building owners adjacent to the highway in Mlolongo began to reconstruct the demolished facades of their buildings. The effect of this reconstruction of facades can be seen even today in buildings such as the Phoenix Building. The facades of such buildings whose fronts were demolished are recognised by the edges of cut beams, light coloured interior rooms exposed and reused as balconies or storage, the discontinuity of covered streets (because load bearing walls go all the way to the ground floor and block) and by the contrast between the old finishes and the new finishes of the reconstructed facades.



Plate 5.27: Reconstruction of the façade of a partially demolished building in Mlolongo on 12th December, 2006. (Source: EGM)

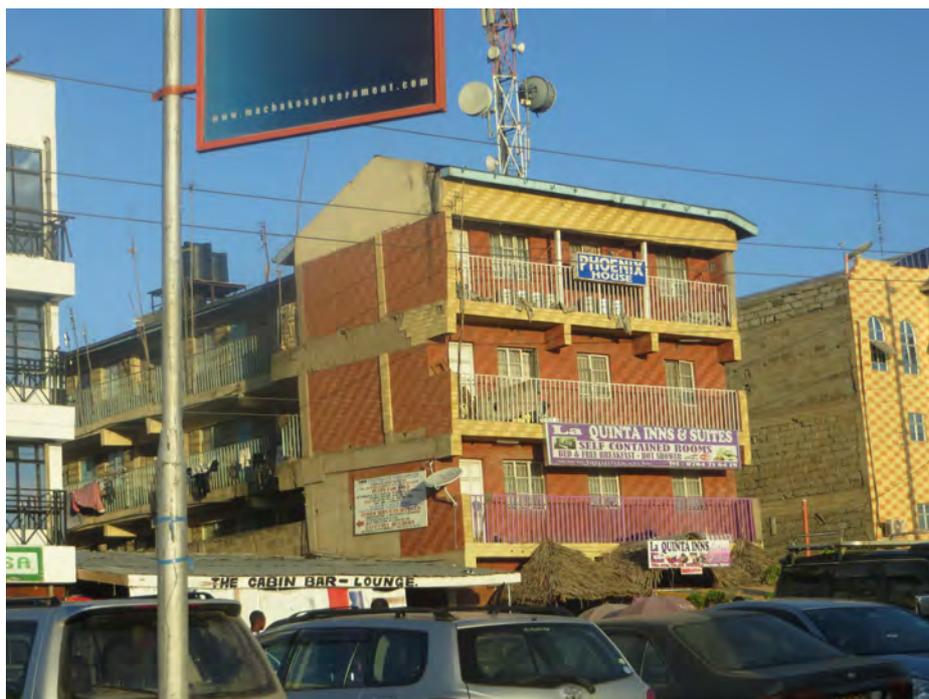


Plate 5.28: The reconstructed façades of partially demolished buildings. Beams are cut and their edges left exposed. Finishes on the fronts of the building differ from those on the side. Partially demolished floor slabs are converted into balconies and extra storage space. (Source: Author)

The position of the speed bumps before the footbridge became a point for the sale of sugarcane after the road was transformed. The slowing down of vehicles, particularly trucks, allowed sales of sugarcane at these points. On weekdays and some weekends, sugarcane sellers operate their businesses at the speed bumps on the highway.

During afternoons in the weekend when the weighbridge is closed and truck drivers have to wait until Monday to have their axle loads checked, a group of rollerblading trainers demarcates and organises the redundant space on the highway at the weighbridge into a rollerblading track for a group of 40 children and their guardians. The rollerblading trainers use traffic cones to mark out a 240-metres length of highway for their activities. They use the road shoulders and the median for auxiliary needs; display of rollerblades, spectating, co-ordination, vehicular parking, eating, dressing up and so forth. The bush next serves as their temporary bathroom. Justin, one of the rollerblading trainers who resides in Embakasi told me that they decided to come to this stretch of the highway as they could only practice in at the Nairobi City Square at the car park opposite Uchumi on Aga Khan Walk before the highway was built. Coming to this location was a shorter distance away and easier to get to for those of their members living in the eastern and southern parts of the city region. He said this temporarily

redundant space served their need for recreation, as they neither had the resources to build their own rollerblading track nor space they could use within their neighbourhoods.



Plate 5.29: Rollerblading at a section of the road through Mlolongo along the Mombasa Highway after the transformations. (Source: Author)

This was not the only section of the highway in which I observed the use of road transportation infrastructure for recreation. Everyday I went to the Mlolongo footbridge I saw people who went to the bridge just to gaze at the panoramic landscape due south east of the footbridge or to sit and rest near its shaded supporting columns. One of these residents Wilson Kiambi explained that this was the only place in the neighbourhood where he could come to relax. He was unemployed at the time of the interview. He felt that coming to the footbridge helped him unwind after his daily job searches in the industrial area of Syokimau along the Mombasa Highway. He said that, *“When I come here and look at the scenery, the estates and the factories (in the distance) in Athi River. And I look at the movement (...) of cars on the highway (...) it makes me forget my troubles for a while. Sometimes I meet other unemployed men who are looking for a job like (here) me and we discuss where (...) and how we can find employment.”*

I observed couples talking in the middle of the footbridge every evening in the sunset. I saw small groups of three or four chatting or just milling around the footbridge ramps and families meeting on the footbridge on weekends. Sometimes these people would spend an hour or so just looking at the Lukenya Hills, the Athi River industrial area scene and the Kitengela Plains. The footbridge, apparently, served not just a piece of infrastructure but a social and recreational space as well.

I observed that since the highway was built, the position of the bus stop to Nairobi shifts depending on the synchronous goings on at the weighbridge and also shifts depending

on the time schedules of the workers in the industries in Mlolongo. For instance, during days when the traffic to the weighbridge is heavy and the highway gets clogged, the bus stop shifts from the highway to the service road. It shifts back to the highway when there is little traffic or fewer people waiting for public transport. As bus stops were not provided at critical intersections along the highway, such as at the Syokimau-Katani junction, passengers are often picked up by *matatus* within the road median as they wait to cross the road. These informal bus stops have developed by default through faults of design. Such oversights and the complete lack of pedestrian crossings betray the fact that the design assumption for the road transportation infrastructure at Mlolongo is that development should conform to highways rather than highways conforming to peoples needs.



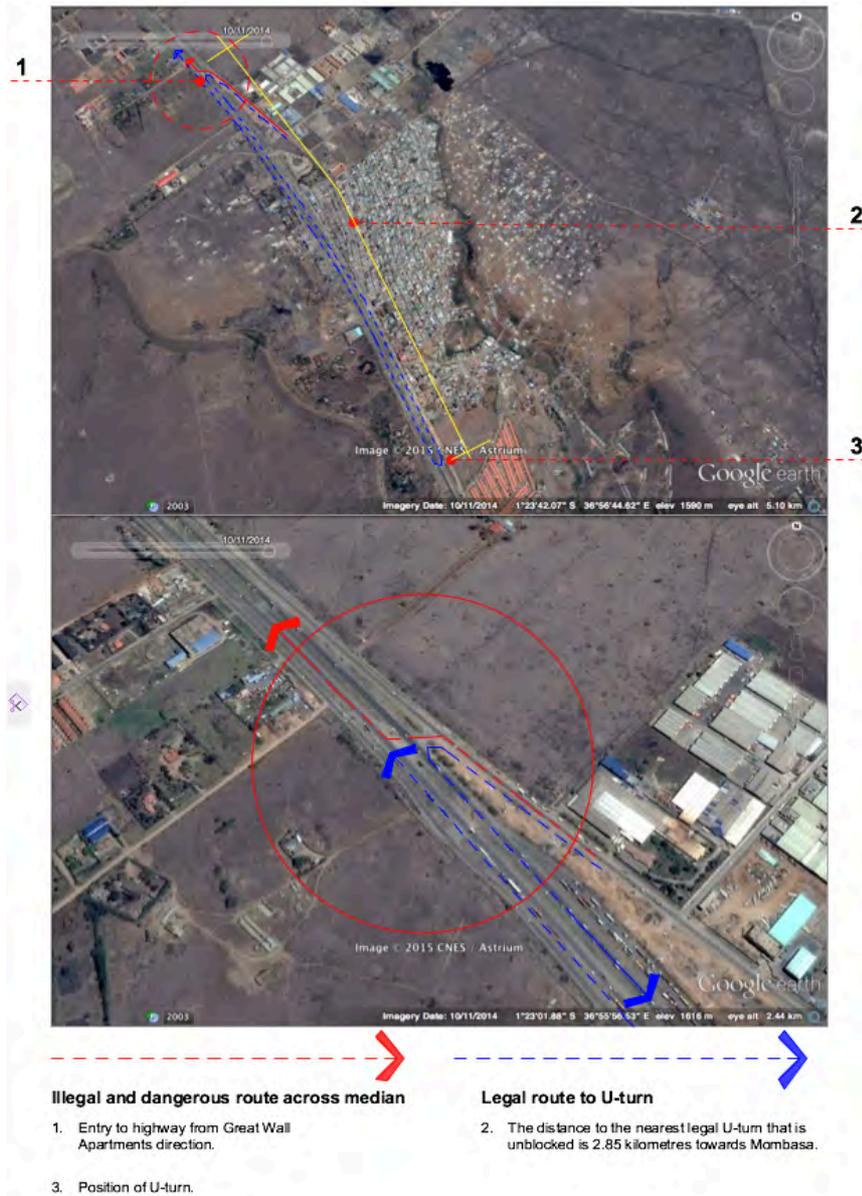
Plate 5.30: The footbridge Mlolongo along the Mombasa Highway after the transformations. This footbridge is not just a crossing but also an important local social space for meeting, watching others, viewing the landscape, and resting. (Source: Author)

At Mlolongo Township I also observed more episodes of the breaking of the Highway Code by vehicles than anywhere else in the case study areas. In the mornings I witnessed sand trucks crossing the median at undesignated points and using the wrong side of the road to avoid passing through the weighbridge. On November 17th 2014 at 6:21 am, I encountered an accident on the road at the footbridge: a truck crossing the median had hit a car (for a vivid testimony of the drama surrounding such an accident see the narration by Jackson Njeru in Appendix B). On January 26, 2015, sand transporters rioted; pulling down fences around the weighbridge and using dismantled traffic spikes and stones to barricade the highway. They were protesting the erection of

barriers on roads at Mlolongo to compel them to weigh their trucks at the weighbridge. The conflict between sand transporters and the government agencies plays out on the road as all possible U-turns within the Mlolongo Township are completely blocked or narrowed by means of crude barricades. Dark streaks on the barricades suggested that the barriers scrape vehicles attempting to use these narrowed U-turns. I also witnessed that in the mornings, rather than go through the only turning at the footbridge, cars, trucks and even school buses driven from the Great Wall Apartments side heading towards Nairobi would cross the median at the point closest to the entry to the highway (see map 5.5). These observations imply that the use of the highway at Mlolongo is no longer determined by road users' adherence to the Highway Code. The use of the highway is determined by local conditions, local interests and by unspoken negotiations between various actors as they express these interests or actively repugn vested political interests couched as legal requirements or propriety.

Though the design of the transformed highways does not take account of the activities around it I observed that the day-to-day activities of the trucking shape the arrangement of space at Mlolongo. I saw an example of this along the stretch of highway extending from the KAPA Oil Refineries to the Mlolongo Township. Truck crews come to pick up goods from industries located here yet no designated trucking yard exists for them to stop outside or within the premises of these industries. So, along one lane of the service road and on the pavement trucks are parked, repaired and serviced as their drivers wait. Some of these truck drivers—working for trucking or consumer goods companies located as far as Arusha in Tanzania—have to wait by the highway to pick goods destined for the Tanzanian market. Informal activities have developed incrementally along the fences of industries to cater to their daily needs. The positions of these activities coincide with those of the informal roadside garage. Thus temporary restaurants, and open-air kitchens, and meeting places are strung in clusters of complementary bunches along the service road. The drivers eat, rest, meet other drivers and negotiate with hawkers and prostitutes. On Friday afternoons some lay cloth on the bare grounds beneath their trucks, kneel and prostrate in prayer. A Ugandan truck driver Ali Bilahi and his turnboy, Hussein Kadi, both muslims that I saw praying in this manner, told me that they sometimes find themselves at Mlolongo on Friday afternoons. Ali said, *“We have to practice the tenets of our faith wherever we are. If we find ourselves here by the highway, we will close out the surrounding and perform our supplications in accordance to our imani.”*

The shaded undersides of their trucks become their temporary prayer room. Thus the space of the highway that is, otherwise, rather nondescript metamorphoses into social space; nuanced and deeply meaningful to some.



Map 5.5: An example of the breaking of the Highway Code at Mlolongo after the transformations. On weekday mornings between the 4th and 18th of November, 2014 between 6.00am and 8.00am 63% of vehicles driven to the entry to the highway at this point directly crossed the median; an efficient but illegal and dangerous manoeuvre. The legal U-turn—that is free of crude barricades placed to constrain evasive sand truck movements at the township—is located 2.85 kilometres south from here. (Source: Author)



Plate 5.31: A picture of makeshift road barricades erected by Kenya Revenue Authority, the Kenya Police and the County Government of Machakos at Mlolongo along the Mombasa Highway after the transformations. Such barricades are used to constrain the movements of sand trucks to prevent them from evading the weighbridge. The dark streaks on the barricades indicate that vehicles scrape and are scraped by the barricades. (Source: Author)



Plate 5.32: A picture showing passengers boarding public transit buses within the median at Mlolongo along the Mombasa Highway after the transformations. (Source: Author)



Plate 5.33: Workers meet and sit on the service road after work in the evening. The Nairobi bus stop and the location of informal activities shift to this position during working day evenings. (Source: Author)



Plate 5.34: A picture of the roadside at Mlolongo along the Mombasa Highway after the transformations. (Source: Author)



Plate 5.35: A picture of the Syokimau intersection along the Mombasa Highway after the transformations. Boda boda operators and informal traders increased at this intersection since the transformation of the highway. (Source: Author)

5.4.3 *Mlolongo summary*

The Mlolongo case study illustrates how a highway can be affected by local historical economy but also how communities exhibit local initiative and creativity in using their own means to deal with the erasure of parts of their space by road transportation infrastructure. This creativity as a result of erasure is evident at the architectural scale. Buildings whose fronts were demolished because they were within the road reserve were retrofitted with new facades. Indoor rooms and interior elements, such as staircases, were exposed to the exterior. These accidental spaces have been converted into storage space, display space and social space while some have been hidden in glass curtain walls. The building/street interface is variable: it is composed by projections and niches adapted for display, street watching and negotiation. This organic character actively shapes the social space in the street. These retrofitted facades, though generated by accident, serve more functions than they were designed for originally -such as storage space and balconies. I found out that they work satisfactorily for the building owners and their tenants and contribute to the visual variety and liveliness of the street. It is ironic that after some commercial buildings were demolished, for being within the road reserve, to make way for the highway the County Government of Machakos built public restrooms within this space at a location that is not directly in the pedestrian circulation paths in Mlolongo Township.

I observed that in Mlolongo, space is negotiated between many different actors: formal and informal. An example is the stretch of the road where rollerblading takes place on weekends. Truck drivers and rollerblading instructors have an understanding on how the space is used. Truck drivers do not park at this stretch of the highway on weekends when the weighbridge is closed. They clear it temporarily for the rollerbladers to use. In this way the space rather than being a static redundant space, used merely for parking and waiting, is transformed into performative street space. The community gets to socialise, learn, share, be physically active, unwind from the tedium of their workweek routines and earn a livelihood from training rollerblading to teens and children, all at the same time.

The new configuration of the highway has also generated new activity social patterns. Here also I found groups organised around the tackling of specific problems and the expression of local interests: handcart owners groups, water supplier groups, *matatu* tout groups, and informal traders groups who negotiated their terms of working and their licensing fees with county officers. Here, too, certain communal concerns, such as security, parking and storage, were organised between businesses. For instance a filling station and the hardware next to it and bus and *matatu* operators would arrange parking and security for the buses and matatus in the evenings collectively while the bus owners would have their vehicles serviced and filled at the filling station. Activities along the highway were ordered in similar complex spatial relationships. Again, handcart pushers, *tuk tuk* (motorised rickshaw) and *boda boda* (motorcycle) transportation was located in unmarked parking lots close to hardware stores, furniture stores and supermarkets. Collaboration between furniture makers, filling stations, spare parts shops and garage owners was common: they could borrow tools from one another or collaborate on projects requiring multiple skills and offering mutual benefit.

However, not all highway space is without dispute. Some spaces are contested among uses and between road users and other road users and also between road users and authorities or their agents. Business owners in some cases negotiate space with truck drivers and pedestrians with conflicts sometimes emerging on who uses spaces on the highway, when they ought to use them and how they should use them. I observed that though some businesses owners find that pedestrian paths interfere with their businesses, in reality business activities depend a great deal on pedestrian circulation and on the linkages between complementary uses generated by this circulation. For instance conflicts sometimes occur between council officers and *matatu* and bus crews about stopping at undesignated locations along the highway. However, these undesignated locations are directly in the path of pedestrians rather than at the more isolated positions where the bus stops are actually located in the design of the highway. There are several other examples of conflicts between more formalised ways of using the highway as was designed, and is supposed to be enforced, and the informal activities

happening on the highway. The County Government of Machakos, the traffic police and the Kenya Revenue Authority officers attempt to block sand trucks from evading load measurement and concomitant taxation at the weighbridge. In spite of their dogged efforts, recalcitrant sand traders and their creative (or rogue) drivers still find new routes and ways to evade the weighbridge. The effects of these contestations and fights over control of spaces spill out onto the highway showing itself in the form of rudimentary barriers and barricades of various kinds: rocks, ditches, warning signs, culverts and speed bumps. Finding way through these strange obstacles are bewildering to motorists (as evidenced by cars bouncing up speed bumps or crashing into barriers) and visitors unfamiliar with the township area.

I also observed that faults and omissions in the design of the highway are ameliorated by the initiative of local communities. Where bus stops are missing, public transit buses stop in the median to pick up passengers so they do not have to cross the highway. Where access roads into the residential areas, where people actually live, are in poor physical condition, *tuk tuk* (motorised rickshaw) and *boda boda* (motorcycle) transport awaits passengers by the highway to transport them to their homes and businesses located as far away as 5 kilometres into the sprawling heterogeneous residential catchments of the highways at Syokimau. The highway serves as an important social space in the absence of parks. The community put to more uses the elements that have been constructed at the highway. The most outstanding example is that of the Mlolongo footbridge. The design of this footbridge differs from the design of the footbridges on the Thika Superhighway: because the landscape rises on both sides of the Mombasa Highway where the footbridge is constructed, it is woven into the landscape naturally and conforms to the contours and direction of the pedestrian path. It is also visually open to the sky and to the panoramic view of the Lukenya Hills and the Kitengela Plains. As a result it serves both as a crossing and as a park. The lack of public space and the consequential phenomenon of infrastructure as public space is beginning to affect a few other African cities. Andre Vltchek (2013) writes that, “*There are also almost no public spaces in other African capitals (...) like Kampala, Kigali, Addis Ababa and Cairo, although, in the latter, at least, people are able to gather on the city’s bridges.*”⁷³

⁷³ In an investigative report on Harare in 2013 Vltchek compared the living and physical conditions in various eastern and western cities with those in Africa’s cities in order to repudiate reports in western media that claim that Harare is among the worst cities on earth to live in: <http://www.counterpunch.org/2013/03/15/harare-is-it-really-the-worst-city-on-earth/> (accessed on 11th April, 2016).

5.5 CASE 3: EMBAKASI

Embakasi is located southeast of Nairobi's Central Business District. It grew around Nairobi's first international airport, the Embakasi Airport, which was opened in 1958. As per 2014 it contains approximately one third of Nairobi's industrial area and constitutes 35% of the land area of Nairobi (Nippon Koei Company Limited et al., 2014). It is the fastest growing division in Nairobi. Its population density is 4546 people per square kilometre according to the 2009 National Census. It contains a mix of land uses and urban functions: industrial, residential, commercial and public. It's social, transport and commercial centre along the Mombasa Highway is located at City Cabanas where the predominantly residential and mixed-use area hemmed in by the quarter demarcated by Airport North Road and Outer Ring Road meets the industrial and commercial areas aligned with the Jomo Kenyatta International Airport boundary and the Nairobi-Mombasa railway. Residential estates in Embakasi include Imara Daima, Avenue Park Estate, Fedha Estate, Embakasi Pipeline estate, Embakasi Village, and Nyayo Estate. Embakasi contains informal settlements such as Mukuru kwa Njenga, Mukuru kwa Reuben, and Kayole Soweto. These informal settlements house some casual workers working in industries at the Nairobi Industrial Area.



Map 5.6: A satellite maps of the case study area showing the transformations of road transportation infrastructure in Embakasi and local landmarks. (Source: Google Earth)

The focus of the case study was the stretch of highway beginning at the City Cabanas junction along the Airport North Road to the Outer Ring Road junction. On the right side of the Airport North Road is lined with industries while the left side is lined with mixed-use low-rise buildings and an informal market. Embakasi

5.5.1 *The physical transformations of the Mombasa Highway and the Airport North Road at Embakasi*

The transformations of road transportation infrastructure at Embakasi consist of the reconstruction of Airport North Road into a four-lane dual carriageway up to the roundabout at the Kenya Airways headquarters where the Eastern Bypass begins and the construction of two overpasses one at the Outer Ring Road junction and the other at the City Cabanas junction along Mombasa Highway. The overpass at the Mombasa Highway junction constitutes part of an interchange that transfers traffic from Mombasa Highway to the Airport North Road and the Eastern Bypass, and vice versa. On each side of the dual carriageway are service roads that serve the industries and residential areas adjacent to the Airport North Road.

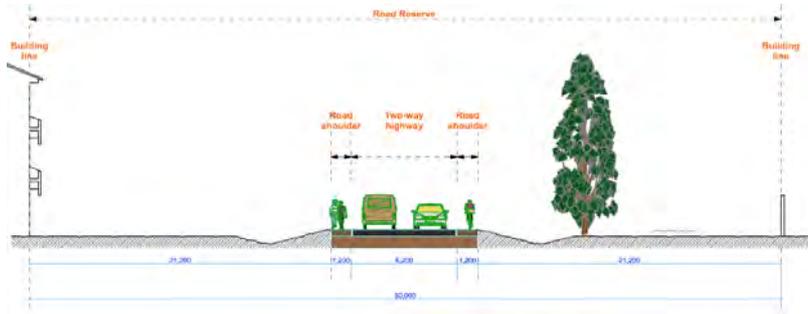


Figure 5.4: A highway section at Embakasi along the Airport North Road before the transformations. (Source: Author)

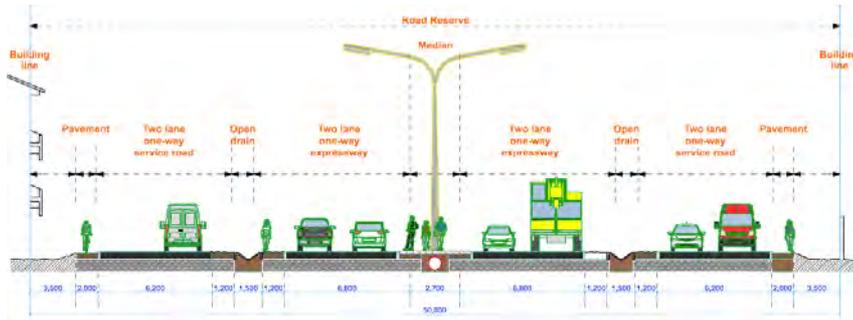


Figure 5.5: A typical highway section at Embakasi along the Airport North Road after the transformations. (Source: Author)

During the construction of the Eastern Bypass, residents and businesses were blocked off from the construction site. Dirt diversions were constructed in those parts of the highway that were later to be made into service roads, bringing vehicle movement closer to the shopfronts. One of the owners of a personal care business that has operated at City Cabanas since 2002 said that during this period business was low compared to before as many motorists and pedestrians were then discouraged from using the bumpy, muddy and chaotic routes that passed through Airport North Road. She also complained of the dustiness of the air during the construction saying: *“We have (had) to clean our premises of dust from the walls and the floors (since this construction began). The new highway is good but business is suffering because of the confusion (around the pedestrian and vehicular circulation paths). Pedestrians compete with cars for space here. And many people walk. Our customers no longer know what to expect as they come here. Some (regular customers) have told me they had to turn back because they couldn't get here! Today it may be okay to come, but tomorrow (the contractor) could just block the highway (without informing anyone in advance)! And then the evenings (here) are just a horrible traffic jam!”*

Before and during the construction period, the perimeter walls fronting industries on the side of the Airport North Road that borders the Jomo Kenyatta International Airport were demolished. They were reconstructed again by the industries. Warehouse buildings housing Metro Cash and Carry (K) Limited, Ramtons Limited and Maersk offices were marked for demolished. On the other side of the highway where businesses and residential areas are located buildings were largely left intact. However, the construction of the service road not only blocked access to the businesses located there but eventually filled up the road reserve all the way to approximately 2 metres from building line.

Before the transformations, an informal market and stalls selling food to workers working in the factories with in the vicinity existed at the City Cabanas junction on Mombasa Highway. The traders were subsequently evicted and their structures also dismantled to make way for the interchange. They moved to three locations: some operate their informal trade on the pedestrian pavement on the service road on the residential/commercial side of the highway, others operate at the empty lot next to the interchange on the industrial side of the highway, and the rest are to be found at the new bus stop near the Tuskys depot.



Plate 5.36: A picture of a section of the road through Embakasi along the Airport North Road after the transformations showing pedestrians waiting to cross the highway. (Source: Author)



Plate 5.37: A picture of a section of the road through Embakasi along the Airport North Road after the transformations showing pedestrians walking in the median. (Source: Author)



Plate 5.38: A picture of part of the retaining wall at Embakasi along the Airport North Road during the transformations. Direct connections between the opposite sides of the highway have been physically and visually severed. (Source: Fwesa)



Embakasi 30.06.2008



Embakasi 30.01.2010



Embakasi 30.09.2013



Embakasi 11.03.2015

Map 5.7: Satellite maps of section of the road through Embakasi along the Mombasa Highway and the Airport North Road after the transformations. **Embakasi, 30.06.2008**: The pre-construction stage before demolitions along the Airport North road reserve showing the dual carriageway Mombasa Highway and its intersection with the single carriageway Airport North Road. A market and bus-stop exist at the intersection of the two

roads opposite City Cabanas and extending along unoccupied land along the Mombasa Highway. Informal traders operate at the bus-stop, along the highway and even on the highway during times of traffic congestion. **Embakasi, 30.01.2010:** The construction stage began after demolitions along Airport North Road with the construction of overpasses at the Cabanas intersection and the Airport North/Outer Ring roundabout. Metro Cash and Carry warehouse to the west of the Cabanas intersection has not been demolished to make way for the interchange. The Airport North Road is expanded into a four lane, one-way dual carriageway from the Cabanas intersection up to the Eastern Bypass. **Embakasi, 30.09.2013:** The Cabanas overpass and interchange and the Airport North overpass are constructed after the demolition of the Metro Cash and Carry warehouse. These incomplete overpasses and the local access earth diversions about them can be seen. Traffic—both vehicular and non-motorised—is disrupted or diverted around the overpasses to facilitate construction. The market that was previously concentrated around the bus-stop along the Mombasa Highway spreads into the open space around the Cabanas intersection. **Embakasi, 11.03.2015:** The post-construction stage with the completed overpasses and the Cabanas interchange. Two footbridges are added along the Mombasa Highway before and after the intersection. The intersection is barricaded using barbed wire and posts. The bus-stop is moved to the south east along the Mombasa Highway. Building density along the Airport North Road increases. Activities shift to the new bus-stop, the two footbridges and in the open space at the intersection. The pedestrian deaths increased drastically after the completion of the Airport North Road and overpass. (Source: Google Earth) *See Appendix D for larger images.

5.5.2 *The reframing of the Mombasa Highway and the Airport North Road at Embakasi*

The reframing of the highway at Embakasi is a reflection of both the economic circumstances of its residents and the functions of Embakasi Division. Embakasi contains densely populated tenements and informal settlements in which workers working in Nairobi's industrial area live. Embakasi also accommodates industries located along the Mombasa Highway and along the Eastern Bypass bordering the Jomo Kenyatta International Airport. Thousands of workers traveling on foot to get to the industries located across Mombasa Highway use the Eastern Bypass (and North Airport Road) between the Taj Mall and the City Cabanas junction. The North Airport Road has only two possible crossing points—each, so far, without road markings, traffic lights, road signs or any other indication that they are pedestrian crossings: at the City Cabanas junction and at the Taj Mall junction. The distance between these pedestrian crossing points is 1.5 kilometres. In the mornings and evenings, hundreds of pedestrians walk along the median and risk their lives crossing the carriageways of the North Airport Road and the Eastern Bypass. Pedestrians jump over the barriers to get to their destinations across the roads. Workers working in industries on the side of the road bordering the Jomo Kenyatta International Airport also dash across to eat at restaurants located at the opposite side of the highway. Women and children going shopping, attending school or attending churches located in the residential part of Embakasi run across the highway in random places along this stretch. I observed some people intrepidly walk and even push carts along the expressway at the overpass as cars and trucks zoomed past them. As of April 2015, the North Airport Road between the Taj Mall and the City Cabanas interchange was declared the most dangerous stretch of road in the whole of Kenya because of the disproportionate number of pedestrian deaths

occurring on it⁷⁴. Julius Wekesa, one of the pedestrians I met and talked at a shop by the highway said to me, “*Crossing (this highway) is dangerous but I have no other choice (of route). We risk our lives (crossing the highway) because we have to make a livelihood. I do casual work. I (hurry) to the industrial area along Mombasa Highway to look for work every weekday and every Saturday. (On days that I am lucky) I get some temporary work in the industries. I cannot refuse to cross the highway because it is dangerous. My family needs the money to survive. (...) The highway is a very good project. It looks good. But (the Chinese contractors) forgot that we need to be safe too. What can I do? Nothing but to live my life and survive!*”

For unexplained reasons the government has not acted to curb pedestrian deaths on this stretch. The informal market again invades the pedestrian path here. Making pedestrians sometimes get into the service road. Informal traders lay their wares on the pavement or hang their wares on the fences of empty lots next to the shopping street. Even shop owners display their products in open space in front of their shops in the view of pedestrians and motorists. And when a traffic jam occurs along the Mombasa Highway hawkers move from the sidewalks into the space between vehicles offering the consumer goods they carry to motorists and their passengers and negotiating prices in stop-go traffic.

I also came to learn about the attempts of business owners at dealing with the loss of visibility that overpasses had wrought those businesses close to the intersections. Bwana Kassim, one of the food business owners I interviewed explained to me how he had adapted his business to the new configuration of the highway. He said that since the contractor of the new highway had erected a wall for the Outer Ring overpass in front of his premises he could only get business from pedestrians and motorists passing through the service road in front of his shop. Other potential customers passing through the industrial side of the highway could no longer see his shop. So he often sent one of his assistants with food packed atop a trolley to the bus stop across the road to sell to people waiting to board *matatus* bound for central Nairobi.

⁷⁴ The rate of pedestrian deaths, in particular, has escalated sharply in the Nairobi Metropolitan Region ever since the transformation of the highways. According to a newspaper report contained at <http://www.businessdailyafrica.com/Road-deaths-up-9-5-pc-in-first-months-2015/-/539546/2694888/-/1j9cppz/-/index.html> (accessed on 20th May, 2015) the riskiest roads are the Eastern Bypass, the Airport North Road, the Mombasa Highway and the Thika Superhighway at Githurai. The report goes on to say proposal to remove roundabouts and replace them with signalised intersections will increase the occurrence of fatal crashes and drive up the rate of pedestrian deaths.



Plate 5.39: A morning scene on a section of the road through Embakasi along the Airport North Road after the transformations. Here workers rush to their workplaces at the adjacent industrial area. (Source: Author)



Plate 5.40: A picture of section of the road through Embakasi along the Mombasa Highway after the transformations. The bus-stop was shifted to an inadequate space so that pedestrians are forced to walk within the vehicular lane. (Source: Author)



Plate 5.41 A picture of the bus-stop at Embakasi along the Mombasa Highway after the transformations showing transportation modes in conflict. (Source: Author)



Plate 5.42: A pedestrian hops over a crash barrier at City Cabanas along the Airport North Road after the transformations. (Source: Author)



Plate 5.43: A picture of section of the highway through Embakasi along the Airport North Road after the transformations. The highway/building interface is 3 metres with no provision for parking. (Source: Author)



Plate 5.44: A boda boda (motorcycle) rider waits to pick up passengers within the median at a section of the Airport North Road at Embakasi after the transformations. (Source: Author)

5.5.3 *Embakasi summary*

The Embakasi case illustrates how the plethora of everyday life functions in a city district in Nairobi impinges in unexpected ways on the use of the Airport North Road. The technical design of the Airport North Road was done in such a manner as to enhance motorised transportation speeds. In the purist goal of enhancing automobile speeds existing vital linkages between the adjacent city district functions, including the mutual functional dependence between the industrial area, the surrounding densely populated mixed residential fabric, the multifarious shops along the commercial streets, and the informal roadside market were ignored. Consequently the design not only results into intense conflicts between vehicular and pedestrian traffic and unexpected social behaviour in the vicinity of the highway but also triggers adaptations to the resultant decline of the qualities of urban space for the various functions artificially bifurcated in urban space by the design of the new highway.

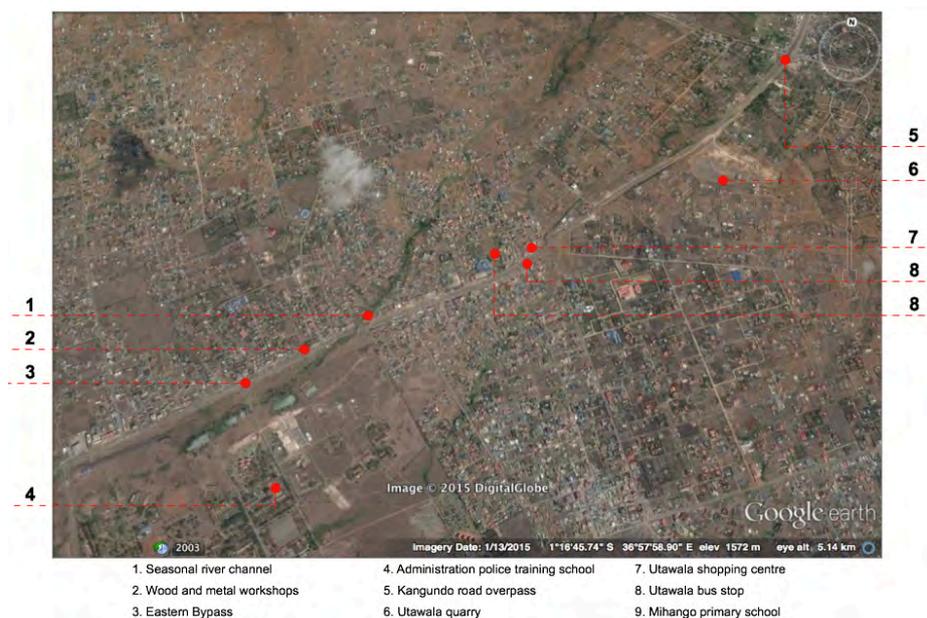
Intense conflicts occur most evidently in the morning rush and in the evening rush as residents walk to work. They necessarily have to cross the highway that, as late as 24 months after the highway was opened for use, has no pedestrian crossings, traffic lights or any other traffic calming devices. I observed workers, housewives, students, and children run across the four-lane highway and the service road and jump over crash barriers directly into the path of motor vehicles. This inexcusable oversight and recklessness in design is the reason this stretch of highway between the Mombasa Highway and the Kenya Airways headquarters is the deadliest in terms of pedestrian deaths according to current media reports. The high human cost, especially of the lives of the poor and vulnerable, is an indictment of the intentions and actions of the authorities in approving and overseeing the implementation of the Airport North Road.

In response to the way that the embankments of the Airport North Road have reduced visibility to one side of the highway some business owners have resorted to extend their premises by the use of trolleys. Some restaurants that, before the expansion of the Airport North Road, depended on patronage from workers from both sides of the road and residents from the mix of housing types in the adjacent neighbourhoods would send out trolleys of food for sale around the overpass and at the Outer Ring Road roundabout.

Many more shop owners display their products within the pedestrian pavement since the transformation of the Airport North Road. Informal traders operate on the street, taking advantage of the physical elements within the highway as vantage points for the display of their goods to potential customers; fences, walls, pavements, drainage channels and crash barriers. Those informal traders displaced by the highway construction organised themselves along the new configurations of the highway but as close to their original positions as was practically possible. For instance clothing and shoe traders located

along the pedestrian path, handcart and *boda boda* operators located at bus stops, and tow truck and forklift operators, taxi drivers, pickup truck drivers, backhoe loaders and excavators located within the road reserves and public land next to the Mombasa Highway-Airport North Road interchange. In all cases traders and operators socially organised their own areas of business. They negotiated and co-ordinated the placement of their equipment, services or merchandise, they democratically determined the management of their everyday operations and they developed some longstanding friendships among themselves and also with other informal traders with complementary businesses in the area.

5.6 CASE 4: UTAWALA TOWNSHIP



Map 5.8: A satellite map of Utawala Township after the transformations showing local landmarks. (Source: Google Earth)

Utawala Township is a new rapidly developing township along Nairobi's Eastern Bypass. Its name "Utawala" is the Swahili term for "Administration" or "Rule" and originates in the presence of the Kenya Administration Police Training School and the General Service Unit Training School in the location. One side of the Eastern Bypass is lined by the Jomo Kenyatta International Airport fence, and the two police training schools whilst the other side of the Eastern Bypass is lined by a commercial zone comprising low rise commercial buildings, workshops, auto repair garages and a primary school. The main shopping centre at Utawala is located along the Eastern Bypass between the boundary of Utawala Academy and the Utawala junction bus stop. A building stone quarry is located on the right side of the Eastern Bypass about midway on the drift after the Utawala junction.

Utawala townships phenomenal growth from 2011 was sparked by the building of the Eastern Bypass from Ruiru on the Thika Superhighway up to City Cabanas on the Mombasa Highway. Before the Eastern Bypass was built, a journey from Thika, Ruiru or other towns to the north of Nairobi to the Jomo Kenyatta International Airport or any location on Mombasa Road beyond the Airport, would require a connection via the Outer Ring Road or connections through the city centre. The Eastern Bypass through Utawala circumvents this convoluted route and provides a less congested alternative for

the trucking of supplies from Nairobi's Industrial Area to the north of the Nairobi Metropolitan Region.

5.6.1 The building of the Eastern Bypass at Utawala

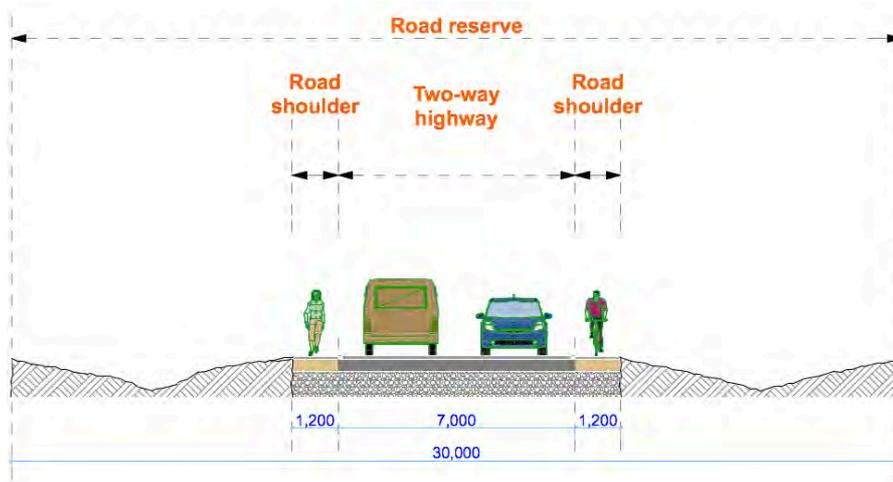


Figure 5.6: A section through Utawala Township after the transformations. (Source: Author)

Before 2008, Utawala Township did not exist. As recently as 2007 residential settlement at Utawala neighbourhood was sparse—comprising single residential units on their own lots—and the primary access into it was by dirt roads from Ruai, a township to the north east of Utawala. Access to the administration police training school and the General Service Unit training school was by a tarmac road that passed within the Jomo Kenyatta International Airport fence and linked with the Airport North Road near the Kenya Airways headquarters (see satellite maps in Appendix D). The residential developments intensified in Utawala beginning 2008 when a dirt road extending from the Embakasi Garrison to Ruai served as the primary access into the Utawala neighbourhood and stood out as the axis of development. By the time the Eastern Bypass was constructed there was a growing residential area in Utawala and the bordering Ruai neighbourhood. With the construction of the Eastern Bypass, this growth was refocused around the new Utawala Township and towards its current overpass at the Kangundo Road junction. The construction of the Eastern Bypass comprised of a new two-lane single carriageway with an overpass at the Kangundo Road junction and a slip road at the Utawala Township. A motorist who used the highway, Munene, explained his apprehension at using the Eastern Bypass during its construction. He said that the highway was isolated and it felt dangerous to him to use it the first time he tried in 2010 before construction was completed. He had heard of

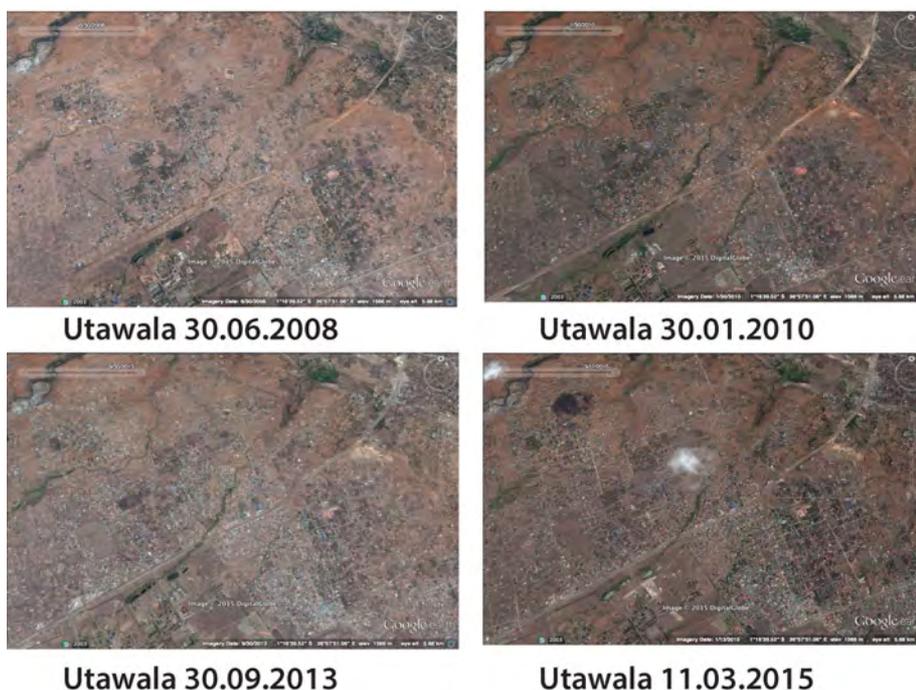
motorists getting robbed on the Eastern Bypass before and he was afraid that if his car ever had a mechanical problem on the highway, he too would be robbed. A resident of Utawala, who wished to remain anonymous, narrated that during the construction the dirt diversions built by the contractor would be dusty during the dry season and muddy in the wet season. Vehicles would get stuck in the sections that turned into a turbid mess in the long season (March-May) rains. Their owners would have to abandon them sometimes overnight or for several days until the rains subsided and the ground dried enough for vehicles to regain traction.



Plate 5.45: Buildings along the Eastern Bypass at Utawala Township after the transformations. The township has grown by a process of rapid accretion after the opening of the highway. (Source: Author)



Plate 5.46: A roadside scene at Utawala Township after the transformations. Activities are focused along the road creating a linear settlement. (Source: Author)



Map 5.9: Satellite maps of Utawala Township showing road infrastructure transformations since 2008. **Utawala, 30.06.2008:** In the pre-construction stage Utawala is a sparse residential settlement hemmed in by military installations. Because of the low density of settlement the pre-construction stage does not involve the demolitions seen in the highway transformations in other locations. **Utawala, 30.01.2010:** The construction of the Eastern Bypass began. The tarmacking of the new highway and the building of the Kangundo Road overpass heralds the transformation of the settlement from a peripheral residential area into an integral part of the Nairobi Metropolitan Region. **Utawala, 30.09.2013:** The Utawala settlement begins to align to the new highway. A fledgling commercial centre can be noticed along the centre of the map defined by the highway and a river valley. Most of the Eastern Bypass complete, the settlement densifies and fills in between the military installations. Excavations to align the topography of adjacent sites to that of the new highway can be seen to the north east of the map. **Utawala, 11.03.2015:** In the post-construction period mixed use buildings, services and informal activities populate the commercial centre along the Eastern Bypass. (Source: Google Earth) *See Appendix D for larger images.

5.6.2 *The reframing of the Eastern Bypass at Utawala Township*

One of the remarkable features of Utawala is its rapid growth both as a township and as a dense residential settlement. Because of this fast growth and the fact that the township grew incrementally the residents of Utawala still perform many of their everyday activities in the town centre. The residential area is largely a dormitory area for people working in central Nairobi. The reframing of the highway stood out in the way that commercial buildings were constructed. I found extensions of the street where building elements normally located in the interior of the building were constructed outside. For instance, staircases to the second and third floors were constructed on the outside so that people on the highway would not have to get into a building to find their way to

businesses on the second and the third floors. I also observed that in many new buildings, the contractors concentrated on finishing the exterior of the building before embarking on the interior. I talked to Maina, one of the foremen working on a new commercial building about it. He revealed to me that he had so far worked on the construction of six commercial buildings in Utawala and Embakasi. He told me that the building owners he had worked for required that their buildings appear complete on the outside before they are finished inside so that they could attract enquiries from potential tenants using the highway. He said commercial building owner(s) built incrementally because they found build to be expensive. So they would build in stages and use informal means of construction where it was possible. They would sometimes run out of money for the construction because they tended to underestimate the cost of construction. Maina told me that commercial building owners had developed a local way of crowdfunding the construction of their buildings: they would build the two lower floors and then would have tenants occupy them. Sometimes the tenants would be left to finish the interior of the building as they wished. The tenants would then pay rent with which the owner(s) would complete the construction. Naturally building owners insisted that the façade fronting the highway was the first to be completed.

Again, though this was new construction, and the buildings along the highway respect to a building line, the actual building line defined by the buildings was irregular, with many projections and recesses, which modulated social space. Within the resulting spaces people met, talked, watched activities on the highway, and shouted greetings to their neighbours. The juxtapositions, heights and styles of the buildings were just as eclectic as the building lines were jagged. The road reserve used for several functions: temporary storage, product display, working, negotiation, informal parking, transportation and repair. Among the products on display in the open were carpets, rugs, clothes, hardware, tools, furniture, metalwork, timber and logs, animal feeds, tree saplings and food items. Informal trade happened on the side of the highway as metal workers and carpenters worked outside. Many culverts were constructed by the business owners themselves to get traffic from the road into their front yards.

Since its construction, the Eastern Bypass has become the main link between the traditional grazing lands of the Maasai located to the south of Mombasa Highway with the grazing lands located to the north of the Nairobi Metropolitan Region. At Utawala evidence shows how the old nomadic pastoralist lifestyle of the Maasai adapts to the highway. On several days during the period of study I found Maasai herdsmen driving their cattle along the Jomo Kenyatta Airport fence and grazing their cattle in the road reserves as they headed north. The north of Nairobi is wetter and more fertile than the south. During droughts the Maasai move with their animals north to seek water and pasture. To the north along the Eastern Bypass the Maasai herders water their herds of cattle, sheep and goats at three rivers: Nairobi River, the Gathara-ini River and the

Kamiti River. They also find grass for their herds along these river basins. A Maasai village is located two kilometres after the Kangundo Road junction on the right on the way to Ruiru just after Nairobi River, an area that is being transformed into an extension of Nairobi's industrial area. The village is now behind an industrial warehouse complex fenced in and built in 2014 for the storage of steel wind turbine towers and propellers. When I began the study the village was visible from the highway in open savannah. I sought to know from the pastoral families living there how the construction of the highway affected them. One of the matrons of the Maasai families—who did not wish to be named—living in the village explained that vehicles along the highway had hit and killed some of her sheep that had strayed onto the highway while grazing on a grassy field next to the highway. Consequently, the village herdsboys had to drive their herds of sheep to safer grasslands farther away from the highway and their village. They also had developed a coordinated way of crossing the highway in the process of returning their herds from the grasslands to their homesteads. They would all do it at the same time. The herdsboys would jointly scan vehicular traffic on the highway and had trained their herds, through signals and whistling sounds, to cross the highway in large herds. She also explained to me that some motorists would stop along the highway to buy sheep or goats for them to slaughter during traditional feasts and marriage rituals. They had learned over time where these motorists would stop. So they allocated village herding duties so that a few women would graze smaller herds of sheep and goats for sale along the highway. Ultimately the matron intimated that they would not consider moving their village away from the highway in spite of looming conflict because the land contiguous with the highway remained accessible to their herds for grazing. Additionally the highway acted as a lifeline through which they could move their herds to areas with pasture and watering holes during droughts. The rest of the land was impenetrable to them; it had been demarcated and sold off to individuals and institutions, a condition inimical to their nomadic pastoral lifestyle.

Other reactions to the highway had to do with its externalities. I observed that traffic jams up to three kilometres long occur in the evenings during rush hours on the Eastern Bypass at Utawala. However, informal activities have not developed around these traffic jams, as is the case at the other case studies. Many of the residents of Utawala felt helpless about the traffic jams in the workweek evenings. Some expressed that they had to change their routines to reflect the traffic situation. Elizabeth Mwangi, a hairstylist with a salon at Utawala said that she sometimes had to leave work early to avoid getting trapped in the traffic jam. Jeremy Gachau, a barbershop owner said that he had to close business before dark because the highway was unlit and he felt unsafe coming from work at night. Abel, a student at Ruiru said that he did not feel safe walking at the roadside at night. He explained that the highway was unlit and not busy at night. So he felt more secure traveling during the day. Though the township is

relatively new, I found that residents were organised into groups that represented shared interests. I found groups for cart pushers, garage workers, and *matatu* crews.

Other major concerns of Utawala residents and the local business community had to do with prohibition by the county against erecting billboards or adverts along the highway. They felt that this would affect the growth of their enterprises and reduced their interaction with highway users. One business owner expressed what she perceived to be the carelessness of the authorities in leaving out critical elements of the highway such as road signs. She felt that the construction of the highway had failed to take account of the requirements of local residents.



Plate 5.47: Incremental building construction along the highway at Utawala Township after the transformations. (Source: Susan Njeri Omollo)



Plate 5.48: A staircase extends the street in this commercial building at Utawala Township after the transformations. The artifice of the external staircase acts as a visible vertical extension of the street amid the clutter of signage and products. (Source: Susan Njeri Omollo)



Plate 5.49: The informal use of shopfronts and the highway/building interface for display of products at Utawala Township after the transformations. (Source: Susan Njeri Omollo)



Plate 5.50: Furniture workshops with their products displayed next to the highway at Utawala Township after the transformations. (Source: Author)

5.6.3 *Utawala summary*

The Utawala case study illustrates how a self-built township is growing linearly along a new bypass. Building owners continue to construct with the help of a system of crowdfunding focused on attracting new business from the new bypass; a process by which the local economy can plug into the economy of the older more established city. These buildings, by the heterogeneity of their design and construction—irregularity on plan, projections, eclecticism of style, fine grain, incompleteness, clutter of signs and signage, self-built accesses from the highway and a certain makeshift quality—modulate the social space in the township. Open spaces next to the highway are richly varied, each serving multiple purposes; display, storage, stock taking, parking, stopping, resting, meeting, seeing and being seen, recycling, upcycling, walking, working, touting and negotiation. Dealings related to commercial exchange either begin or exclusively happen at shop fronts and the street/building interface rather than inside buildings as happens in the more formal central city and industrial area. Extensions of the street are achieved by turning buildings inside out; the construction of interior building elements on the outside of buildings—such as staircases, passageways and racks, aid pedestrians and other highway users to see and find their way into businesses located on upper floors. This new town competes with the older parts of the metropolitan area by an aggressive display of actual products and services—and the productive processes

assembling products, out in the open, like happens in a market, rather than behind shop windows or in conventional workshop buildings. Products and services include food, hardware, furniture, drapery, carpets, animal feeds, building materials and hardware, car repair and maintenance, car washing, carpet washing, hairdressing, product promotions, religious crusades, and political addresses among others.

Utawala also illustrates how the traditional Maasai and Kamba communities adapt the highway as a cultural armature in a globalising world to suit their unique lifestyle needs. For traditional Maasai and Kamba communities resident to the east of the city all the way across the Kilimambogo plains, the highway remains the last link between the variant sites of their pastoral practices even as the land beside highways in the Nairobi Metropolitan Region becomes increasingly inaccessible to them through acquisition for various scattered periurban functions and informal activities: housing, warehouses, motels, workshops, neighbourhood stores, schools, service stations, pubs, cottage industries and markets among others. Often, Kamba and Maasai herdsman graze their livestock within the overgrown grassy fields contiguous with the JKIA fence and on the verdant earth berms beside the highway at Utawala. This scene juxtaposed with the view of planes landing within the airport make vivid the irony of modern infrastructure. That though the Maasai and Kamba are the original occupants of larger Nairobi, the highways—and other types of infrastructure in the landscape—have never been designed to take into account their lifestyles. Instead they are either constrained to live within the remaining tenuous connections to the land or driven farther away from their grazing lands.



Plate 5.51: Local artisans construct a culvert and access from/into the highway at Utawala. Residents and businesses have been left to connect their own premises to the highway. (Source: Author)

5.7 CASE 5: ATHI RIVER-KITENGELA TOWNSHIPS

Athi River and Kitengela are townships that share a common border. Athi River is in the jurisdiction of Machakos County while Kitengela is in the jurisdiction of Kajiado County. Also, though they share a common border, in the Nairobi Metropolitan Region, Athi River is within the Eastern Metro Region while Kitengela is within the Southern Metro Region. These townships are located approximately 30 kilometres to the southeast of the Nairobi City Central Business District.

Athi River, located just off the Mombasa Highway along the Nairobi-Mombasa railway line, is an industrial town of 137,211 people, according to the Kenya National Population and Housing Census of 2009, with six major cement factories, the Kenya Meat Commission factory, Devki Steel Limited, the National Housing Commission EPS factory, Kifaru Limited and other processing industries. It accommodates Nairobi's Export Processing Zone and contains a mix of sparse but growing residential areas comprising detached houses on their own lots, low-rise apartments, and gated communities (Nkedianye et al., 2009). It also has a commercial centre that aligns to a single 3-kilometre looping street. It is the headquarters of Mavoko Division in Machakos. The town began, according to the Kenya Gazette of May 1910, as a train stop in 1902. Following the 1954 establishment of the 10,400-acres Konza grazing scheme and other grazing schemes in the Kajiado rangelands (Kategile et al., 1992), it became a processing town for livestock and livestock products with the setting up of the Kenya Meat Commission. During the 1980s and 1990s Athi River grew rapidly on the back of its industrial base and the establishment of the Export Processing Zone there (Nkedianye et al., 2009). Today Athi River is one of the fastest growing regions of the Nairobi Metropolitan Region because of its accessibility to the central city and the availability of swathes of land in the former Machakos rangelands for residential housing and industrial developments.

Kitengela is a township separated from Athi River to the South by the tarmac road to the Export Processing Zone. Both townships are connected to Nairobi via Namanga Road and the Mombasa Highway. Namanga is 119 kilometres south of Athi River-Kitengela on the border between Kenya and Tanzania. The Kitengela Plains, where Kitengela Township is located, were originally occupied by the Maasai. Livestock pastoralism formed the backbone of the Maasai's economic and cultural activities (Kategile et al., 1992). Beginning 1964 the Government of Kenya set up group ranches in arid and semi arid regions of Kenya, including Machakos and Kajiado, so as to mitigate conflicts occurring as a result of dwindling pastures for livestock pastoralism (Kategile et al., 1992). Kitengela started off as a trading post at the confluence of the borders of Kajiado and Machakos Districts where the Maasai in group ranches in these districts (Kategile et al., 1992) could obtain supplies for their own needs after trading

their animals to the Kenya Meat Commission factory in Athi River. With the failure of the group ranches after the 1973-76 drought pressure to subdivide ranch land was exerted on the government (Kategile et al., 1992). The Kitengela Group Ranch made up of 18,292 ha and 214 registered members was subdivided in 1988 (Nkedianye et al., 2009). Land sales from individuals who had been members in this group ranch led to further growth of Kitengela township as a residential area for people from many other regions of Kenya working in Nairobi and Kajiado (Nkedianye et al., 2009). The population in Kitengela grew nine-fold in ten years from 17,347 in 1999 to 150,676 in 2009 according to the Kenya National Population and Housing Census.

The roads in Athi River-Kitengela comprise of: (1) the Mombasa Highway that serves vehicular traffic to Machakos, the headquarters of Machakos County, towns in the Ukambani hinterland, and the port of Mombasa. (2) the Nairobi-Namanga Highway that connects to the Mombasa Highway via an interchange and serves vehicular traffic to Kajiado, the headquarters of Kajiado County,

5.7.1 The physical transformations of Namanga Road at Athi River-Kitengela

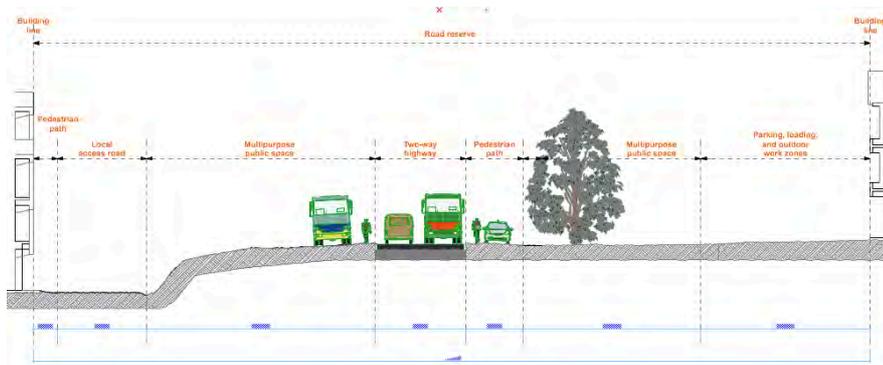


Figure 5.7: A section through Kitengela Township before the transformations. (Source: Author)

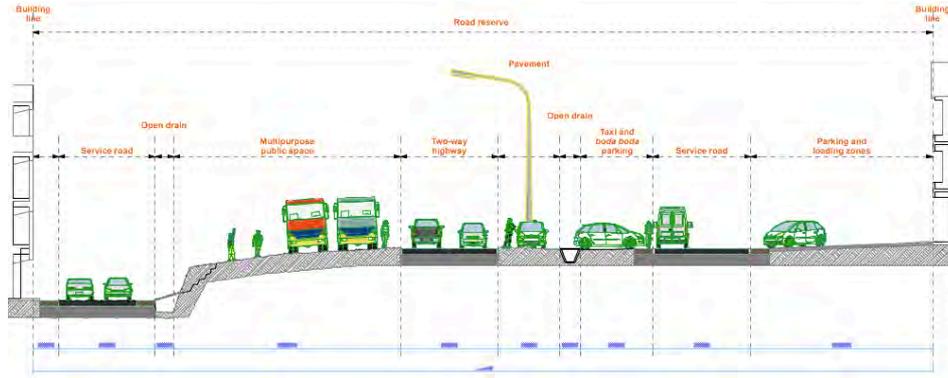


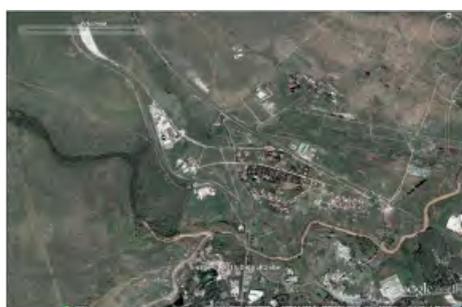
Figure 5.8: A section through Kitengela Township after the transformations. (Source: Author)



Plate 5.52: A section of the highway through Kitengela Township after the transformations. Though the road construction conformed to the slope across the township no linkages were constructed to bridge the two sides of the main shopping street. (Source: Susan Njeri Omollo)



Plate 5.53: A section of the highway showing the separation of pedestrian and vehicular traffic at Kitengela Township after the transformations. The crash barrier to the right bifurcates the township. (Source: Author)



Athi River 30.06.2008



Athi River 30.01.2010



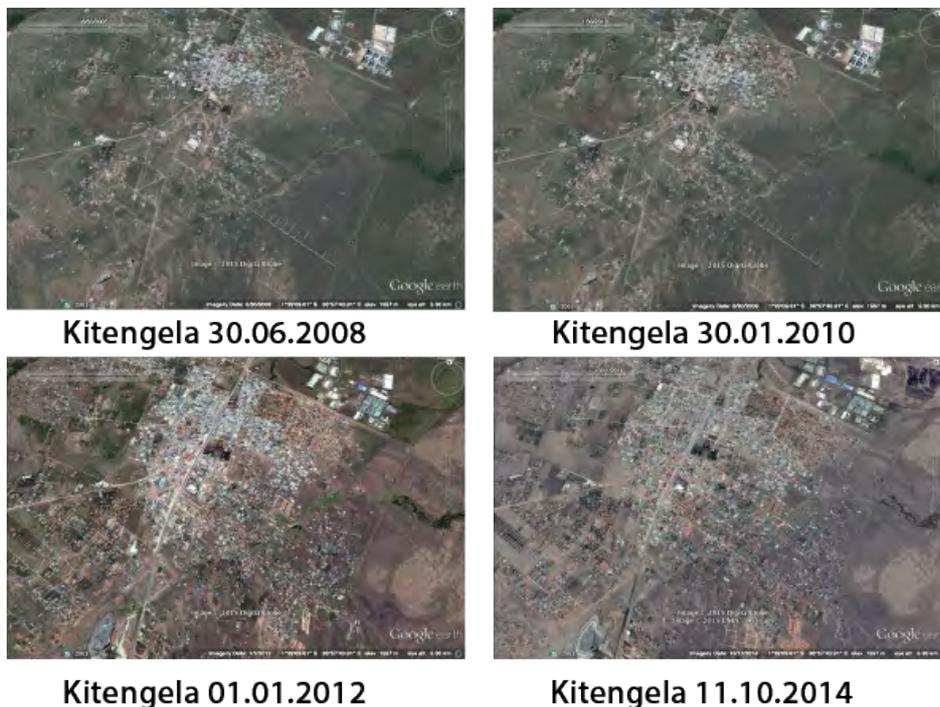
Athi River 01.01.2012



Athi River 29.01.2014

Map 5.10: Satellite maps showing the transformation of road transportation infrastructure in Athi River Township since 2008. **Athi River, 30.06.2008:** At the pre-construction stage the sparsely occupied area along the two lane, two-way single carriageway limits the number of demolitions of structures and buildings located within the road reserve. **Athi River, 30.01.2010:** Diversions are created at the construction stage. Transformations entail dualising of the single carriageway and the construction of an interchange and overpass at the Namaga Road intersection. The amount of aerial dust is evident as the earth road diversions

passing through local areas are the sole route left for heavy trucks transporting goods from the Mombasa port to the hinterland. **Athi River, 01.01.2012:** The completion of the dual four lane, one-way dual carriageway, the interchange and the overpass see the increase in the residential housing density in the land between the river and the highway. **Athi River, 29.01.2014:** In the post-construction period residential building density continues to increase but activity levels do not increase as rapidly as in the other case studies as the land adjacent to the highway is occupied by industries and more formal institutions. (Source: Google Earth) *See Appendix D for larger images.



Map 5.11: Satellite maps showing the transformation of road transportation infrastructure in Kitengela Township since 2008. **Kitengela Township, 30.06.2008:** During the pre-construction period the two lane, two-way single carriageway of the Namanga Road cuts through Kitengela and the sparsely settled Kaputiei Plains. Informal activities conglomerate around the local road leading to the Kitengela market. **Kitengela Township, 30.01.2010:** At the construction stage, the Namanga Road is resurfaced as traffic is diverted through local service roads which are made by upgrading local roads along the shopfronts flanking the main road. Informal activities invade the space of the main road and shift around ongoing construction. **Kitengela Township, 01.01.2012:** The township begins extending along the highway with informal activities conglomerating about the service roads and the bus terminus. The residential catchment densifies about the commercial centre. **Kitengela Township, 11.10.2014:** In the post-construction period an intensely active informal market invades the space between the service roads and the highway. Traffic also becomes heavier within the township as the main highway while serving local traffic also remains the conduit through the township. (Source: Google Earth) *See Appendix D for larger images.

5.7.2 The reframing of Namanga Road at Athi River-Kitengela

Athi River-Kitengela contains a heterogeneous mix of functions. The Athi River Gate is the entry to the Nairobi National Park from the southern part of the Kitengela Plains. The human wildlife conflict, expectedly, is intense in these plains. Athi River is an official industrial zone with the Export Processing Zone forming the focus of its

industrial area. Kitengela the township adjacent to Athi River is the commercial hub. The Kitengela commercial centre is more vibrant and more built up than the Athi River commercial loop. The larger Athi River-Kitengela Plain is a dormitory neighbourhood for people working within Nairobi: gated communities such as Everest Park Apartments, Sunset Boulevard, Hillcrest Park, Delta Plains, Graceland Estate, River Park Estate, Greenpark Estate, and Lukenya View Estate among others leapfrog across the landscape in a manner suggestive of urban sprawl. But, in stark contrast, there are also a number of informal settlements, such as Changombe, Kanaani, Kisumu Ndogo, and Kosovo, in Athi River-Kitengela particularly in close proximity to the industrial zone.

I observed that activity patterns on weekdays vary from those on weekends. On closer observation I came to the understanding that these variations relate to the functional mix of the two townships and to the land uses in the tracts of land contiguous to the townships and to the Nairobi National Park. Athi River-Kitengela borders the Nairobi National Park and recreational activities—such as the Ostrich Farm, the Rhino Charge, several hotels, tourist resorts and Maasai cultural villages—are located in the Athi River Plains. City residents seeking a break from the city scene and tourists drive through Athi River-Kitengela to get to and from these activities especially over the weekends. The Nairobi-Namanga-Arusha Highway is, incidentally, also the quickest way to get to the Tanzanian border (at Namanga) from Nairobi. So both the trucks delivering Kenyan-made products to Arusha and hauling Tanzanian produce to Nairobi use it. As a result traffic along the highways in Athi River-Kitengela is heaviest during weekends and during weekday evenings. In fact during the weekends when the study was carried out in 2014 and 2015 daylong traffic jams were common in the Athi River-Kitengela stretch of the highway. This pattern of land uses and locational characteristics, and the traffic they generate determine the way activities occur on the highway. The reframing of road transportation infrastructure, then, becomes evident in various ways.

First, activity patterns for local residents have changed since the transformations and the increase of traffic. In an interview I had with two motorists, Vick Bayo and Anne Nyaga, who have been resided in Kitengela for just over ten years, I learned that they avoided driving to Kitengela Township on the weekends. Why? Because of the traffic congestion they anticipated there during weekends. If they had to go to the township, they preferred to leave their cars at their residences and use public motorcycle transport, *boda boda*, to beat weekend traffic.

Second, in the roadside market at Kitengela informal activity infiltrates spaces contiguous with roads to the extent that even auxiliary road structures such as storm drains are adapted for various uses. Even the service road is inundated by activity (see plate 5.53). During the construction phase, informal activities went on around the

construction area in complete disregard to the danger posed to informal traders by the working of construction equipment. Informal traders have demountable and portable frames that they erect within the pedestrian path to display their products next to the highway. The areas of the market that contain the most intense activities are those located in propinquity to both the main bus terminus and the most centrally located store in Kitengela, Eastmatt. One fruit seller, Muli, intimated that he preferred undertaking his trade next to the highway here. He said,



Plate 5.54: The increase in visible informal roadside activity in Kitengela Township after the road infrastructure transformations. At one wing of the Eastmatt Supermarket (the building to the left), goods are painted over the windows rather than being put on display in them. (Source: Susan Njeri Omollo)

“I am here because (the people of) Kitengela walk here and they notice my products as they pass by. Sometimes even motorists in the traffic jam call out to me and ask (me) to get (them) sell fruits. We negotiate in (the) traffic (jam). I think they find it convenient to stop (and buy from me) on their way back from work. I sold at the county council market before. But business is good here in the evenings. Even better than (at) the (county) market.”

Third, business owners have adapted shop fronts to the change of the level of the road. The number of buildings with staircases on the outside facing the street front increased threefold (from 4 to 14) during the period of the research. In the township, workshop owners and business owners erected makeshift footbridges to help pedestrians get from the highway shoulders to the service road then onto the shop front. Increasingly shopkeepers and hardware owners display their goods outside the shop and even right

on the highway (see plate 5.55). And as the main highway is elevated and activities are intensified, products are displayed even on the second and third floors of buildings.



Plate 5.55: A section through Kitengela Township during the transformations. The workman in red is constructing a kerb even as informal activities go on around him. (Source: Author)



Plate 5.56: Products displayed within road space at Kitengela. The building is subjugated to a secondary role as the products and their displays are made more visible on the highway. (Source: Author)



Plate 5.57: The façade of a commercial building at Kitengela Township after the transformations. Products and display subjugate buildings to secondary urban elements. (Source: Author)



Plate 5.58: Juxtaposition of formality and informality in Kitengela Township after the transformations. The parking in the foreground is formal while the shopping street next to the highway is informal. (Source: Author)



Plate 5.59: A sugarcane seller at Kitengela Township prepares his sugarcane for consumption in view of potential customers on the highway. (Source: Author)



Plate 5.60: The roadside scene on Namanga Road at Kitengela Township after the transformations. Informal trade is set up around the structures at the highway including even temporary storage, seating and advertising within storm drains. (Source: Author)

5.7.3 *Athi River-Kitengela summary*

The case of Athi River Kitengela illustrates how everyday life and the functioning of the highway are co-dependent for both communities living in contiguity with the highway and the highway users who may not be residents of those communities. I found out at Kitengela that residents have adjusted their everyday lives in several ways according to what happens on the highway. Some avoid using the highway on weekends when there are many visitors passing through their township in order to access the recreational facilities and the park. They therefore will not undertake activities such as shopping during weekend evenings because of the traffic congestion on the highway. Others have dropped the use of cars. They use motorised rickshaws and motorcycles, which are more versatile in situations of jammed traffic. To remedy the bifurcation of the township, traders build makeshift bridges. These reconnect the spaces of operation transcending the highway (see plate 5.61 and 5.62). These makeshift bridges are multifunctional; they help pedestrians cross over the drainage channels and serve as display boards of adverts and posters. The open drainage channels are also adapted for purposes of storage and as street furniture: during periods of dry weather informal traders sit on the edges of storm drains and arrange sacks of extra stocks of products in them. The informal traders at Kitengela have also in their own creativity, crafted portable and demountable display stands for their range of merchandise. Drapery, insecticides, fruit, live animals, flash discs, second-hand shoes and so forth. They are highly organised in the way that they manage their places. For instance they collaborate on security matters with the security guards of adjacent shops and supermarkets. For a small fee to the security guards those near the supermarkets leave their merchandise covered overnight on their stands in the watch of the security guards. There are several such cases of collaboration between the more formal businesses and the informal traders. I found that this kind of juxtaposition is different from that of the shopping mall and tenements on the Thika Superhighway. While the glitzy shopping malls on the Thika Superhighway turn inward in order to avoid the visual clutter of the informal settlements surrounding them, at Kitengela they open out into the informal market to attract customers of all kinds. Thus the whole township is active through the day and night and encourages the circulation of pedestrians into both the more formal and the less formal enterprises. At Kitengela, too, goods are displayed out in the open rather than in the shopfront or within display windows. In some cases goods are placed within the space of the highway far from the shopfront. This aggressive display of products subjugates buildings to secondary roles of storage and amenity rather than the primary social role they otherwise play in the more formal central city.



Plates 5.61 (above) and 5.62 (below): A series of makeshift bridges made across the drainage channel at the township so as to reconnect social spaces that transcend the highway. (Source: Author)

Chapter 6

6 EMPIRICAL FINDINGS AND ANALYTICAL FRAMEWORK.

6.1 THE COMPARATIVE REFRAMING OF NAIROBI'S HIGHWAY INFRASTRUCTURE

There were recurrent themes that I found across the case studies that help in the understanding of the urban processes from the perspective of various users of the highway. In the following section I describe the experiences of journeys according to the responses I received in interviews with residents in the case study areas. I also explain why there were certain differences: (i) in the way that elements of infrastructure were adapted in the different case study areas, and, (ii) how the transformations are influenced by differences of land use in the Nairobi Metropolitan Region.

6.1.1 *Journeys on Nairobi's transformed highways*

The transformations that were envisaged by the road transportation infrastructure projects all have connections with journeys in the city and in the region. Journeys, particularly on public road transportation, have changed in the city. The experience I got of the city after the transformations was different from that before. First, because of the drastic changes of landforms along the Thika Superhighway certain places have lost the visual connections they had with the highway. The underpasses and overpasses have annihilated the intervisibility that existed before between local landmarks and the travellers moving along the highway. Therefore opportunities for local areas to benefit from the wider influences promised by location next to the highway have been limited. Second, journeys have become unpredictable particularly on public transport; routes have changed. Before the transformations, public transport would operate along linear routes to central Nairobi and back. The stops and sequences of spaces were predictable. Since the transformations there have been two types of changes to journeys in the Nairobi Metropolitan Region: there are routes that follow a loop-like pattern and, then, there are those that are broken into two or more journeys. The reasons that these changes occurred are dual and related. Since the transformations, traffic congestion has increased along the transformed highways causing losses to the operators of public road transport vehicles, commonly referred to as public service vehicles. This has resulted in public transport operators working out and operating on routes that are less congested. So they turn off from the congested transformed highways into the untransformed older less congested routes. As a *matatu* driver operating the Mlolongo route, John Musila, explained, "*We make money (by) making more trips. Mombasa Highway is constantly congested since the bypasses... (were built). The addition of lanes did not change the flow of traffic. In fact it is (now) worse (than before)! We (...) try to find routes that will get us into (central Nairobi) much faster than the route through (Mombasa Highway). In the mornings we go through South B, City Stadium and Muthurwa. It is only when we*

come back to Mlolongo that we use the Mombasa Highway. If we used the (Mombasa) Highway we... (would) make no money.”

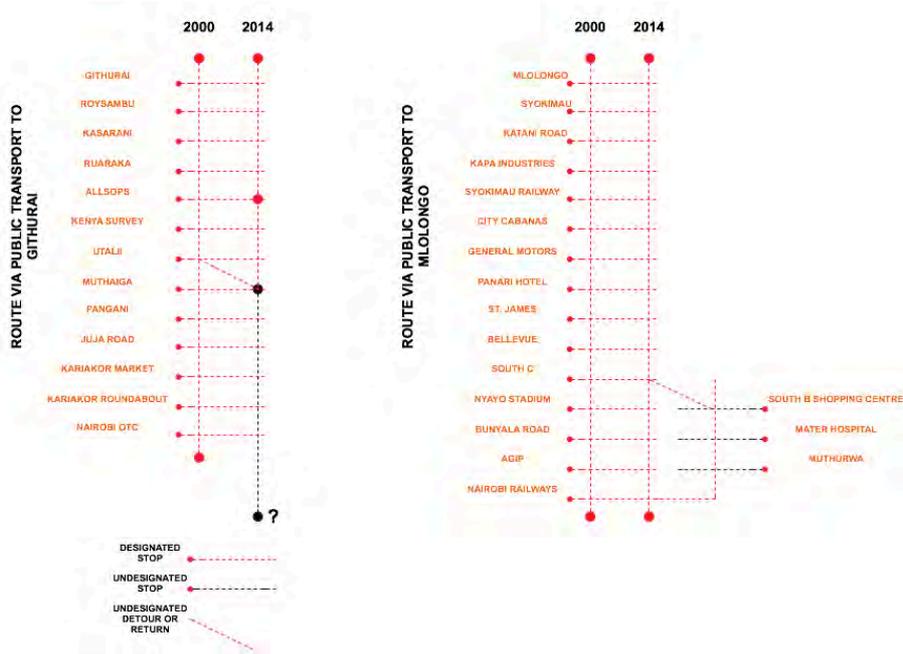


Figure 6.0: Journeys before and after the transformations. Routes are unpredictable with shifts from linear movement to looped routes and broken routes. (Source: Author)

The other reason why there are changes to routes is because of the long-term frosty relationship between the traffic police and the civilian owners, operators and crews of public service vehicles. In post-independence Kenya corrupt traffic police officers frequently stop public service vehicles including *matatus*, buses, motorcycles (*boda boda*), and motorised rickshaws (*tuk tuk*) on trumped up charges. Vulnerable to the weak and bureaucratic system of justice, public transport operators either have to pay bribes daily so that their vehicles can be allowed to operate on the highways or be subject to needless harassment and arbitrary arrest of *matatu* and bus crews. Most opt to pay bribes. This situation has caused route changes on the highways as follows:

(1) Since the implementation of the road infrastructure transportation projects there has been an increase in surveillance on the transformed highways: traffic police, traffic marshals and CCTV cameras. As a result *matatu* crews frequently decide to use routes that will avoid encounters with corrupt traffic police officers. As crews often have to make route decisions on the fly, public transit routes are unpredictable. When I interviewed passengers, they said they understood why public service vehicle crews had

to make route decisions on the fly. However, they would be inconvenienced sometimes being dropped a kilometre or two away from their usual transit stop. Also the looped routes would be particularly bewildering in situations when vehicles would break down at unfamiliar locations away from the routes that passengers were used to. As Warda Muli, a passenger on a bus to Kitengela told me, “*Most weekdays the (Mombasa) Highway is congested. It is fine that the matatu crews make (impromptu) decision to use alternative routes into (central Nairobi) like going through South B and Muthurwa. But sometimes they drop (me) off at places that are inconvenient for me. They are in a rush to get other passengers to transport so they do not care about (causing inconvenience to) passengers. Sometimes I get to work late because I am dropped off at (the) Railways (bus stop). I have to walk almost two kilometres to GPO (the General Post Office)!*”

(2) The traffic system in Nairobi is also such that the convenience of private motorists, government officials, and expatriates are considered to be above those of everyone else using the transformed highways. A traffic police officer at the Uhuru Highway/Haile Sellasie roundabout explained to me that they are intermittently given orders by senior police officers to restrain motorists on certain routes at the transformed highway intersections longer than others. This, he added, happens because government officials traveling to the government quarter (on the City Square and along Harambee Avenue) or to Nairobi’s airports use those intersections and must pass through the intersections faster than everyone else. This segregation of traffic according to whose time and convenience are regarded to be more important, further worsens traffic congestion⁷⁵ and leads to increased avoidance of the transformed highways by public transport vehicles.

Broken journeys are a spontaneous transportation strategy that are largely unpopular among passengers I interviewed but are considered to be convenient by *matatu* crews. They occur mainly on the Thika Superhighway but are also present along other highways. Road transport operators routes from and to destinations farther away from the Nairobi central business district opt sometimes to transfer passengers to those operators whose routes serve destinations closer to the city centre. The benefit is mutual: those serving farther destinations avoid the traffic congestion on the highways closer to the city centre and can make more trips (than, say, if they operated all the way to the city centre), while those serving routes closer to the city centre find receive more passengers from out of town. Broken journeys also happen at the junction of the transformed highways and local roads that serve destinations in the residential catchment areas of those junctions. The local roads are all-weather road or dirt roads in

⁷⁵ Congestion on highways is worse when foreign officials visit Nairobi and some highways are closed. For instance, during Israeli Prime Minister Benjamin Netanyahu’s visit to Nairobi between 5th-7th July, 2016, he publicly apologized for the traffic congestion his entourage had caused the citizens of Nairobi. See a report of this at: <http://www.timesofisrael.com/netanyahu-apologizes-for-nairobi-traffic-woes/> (accessed on 22nd July, 2016).

moderately good condition to bad condition. So for passengers to get to the residential catchment flanking the highways, they have to transfer from or to motorised rickshaws (*tuk tuk*) or motorcycles; local roads are more critical than the highway in facilitating everyday life. In fact, the conditions of local roads impact the use of the highway: during my fieldwork in April 2013, I encountered two school buses carrying school children bogged in muddy roads about 100 metres from the highway. Three children told me that during heavy rains they skip school because they cannot get to the highway from their homes located in the flanking residential areas. Also when local roads are particularly muddy, motorists driving on the highway avoid driving on the lanes next to intersections where the tyres of trucks joining the highway deposit clods of earth picked from muddy local roads. Pedestrians, too, avoid crossing at such intersections. So patterns of activities above, adjacent to and under highways are more dependent on local conditions than on the conditions of the highways (see plate 6.1 and 6.2)



Plate 6.1: The condition of the access roads affect the use of Mombasa highway at Mlolongo Township even after the transformations. Here pedestrians avoid walking along the service road after the rains to avoid muddying their feet or shoes. (Source: David Gaines)



Plate 6.2: The shifting bus terminus at Mlolongo township after the transformations. Shifts of the terminus depend on the vagaries of the day including rainy weather and the degree of congestion on this section of the road as determined by the length of the truck queue to the weighbridge. (Source: David Gaines)

6.1.2 *Space-time patterns and the social inclusivity of highway infrastructure in Nairobi*

I carried out a survey in order to reveal the influence of the road transportation infrastructure transformations on the everyday journeys of pedestrians at footbridges along the Thika Superhighway. I observed that informal activities were concentrated at certain footbridges but not others, yet those locations had similarly designed highway infrastructure. The footbridges of Thika Superhighway at Roysambu, Mwiki and KIE are a case in point; similar footbridge designs and similar restrictions on traffic movement along the highway characterise each case. But the concentration of informal activities is higher at Roysambu compared to Mwiki. Few informal activities exist at KIE. I used the format of space-time diaries to establish the variation of accessibility and inclusivity at these locations. In other words, I wanted to know who used these locations and how far they travelled from and to these locations during the day to know if and why the occurrence of activities in these locations varied. I asked pedestrians at the footbridges where they stayed, where they worked or studied, where they were going, which destinations they had been to that day and where they would go in the course of the same day. I also asked what they were going to do, how they travelled and how long they estimated their journeys would take. I then computed the maximum distances by road or highway to these destinations using satellite maps. The results are contained in tables 6.0, 6.1 and 6.2 below:

Table 6.0: Averages and standard deviation for selected travel indicators, Mwiki, Thika Superhighway.

Travel indicators	Mean	Standard deviation	Sample size
<i>(1) Geographic range (km)</i>			
Maximum distance from home	6.2	8.3	32
Maximum distance from city centre	18.3	15.1	25
Maximum distance from primary workplace/school	4.2	6.5	47
	7.7	11.7	33
Total distance of all travel episodes	11.6	23.4	31
<i>(2) Transportation capability</i>			
For all trips regardless of mode	9.9	19.2	47
For work trips by foot	20.7	16.2	32
For work trips by public transport	19.5	14.6	31
For work trips by car	10.8	8.0	4
<i>(3) Physical accessibility</i>			
Distance from home to work (km)	17.4	33.2	34
Distance from home to usual shopping location (km)	12.3	2.3	37
	47	37.7	26
Commuting time by foot (minutes)	68	62.1	38
Commuting time by public transport (minutes)	53	62.8	5
Commuting time by car (minutes)			
<i>(4) Activities and durations</i>			
Number of separate activities listed in diary	15.8	7.6	33
	123.4	87.7	47
Duration of all travel episodes (minutes)	57.1	28.5	48
Duration per travel episode (minutes)	3.2	1.2	37
Discretionary hours per day	6.9	3.1	43
Total number of trips per day			

Table 6.1: Averages and standard deviation for selected travel indicators, Roysambu-Githurai, Thika Highway.

Travel indicators	Mean	Standard deviation	Sample size
<i>(1) Geographic range (km)</i>			
Maximum distance from home	5.5	5.2	38
Maximum distance from city centre	18.2	10.4	39
Maximum distance from primary workplace/school	2.7	6.5	47
Total distance of all travel episodes	9.1	13.1	31
Mean distance per trip	17.4	20.8	37
<i>(2) Transportation capability</i>			
For all trips regardless of mode	11.3	19.2	47
For work trips by foot	5.4	4.5	21
For work trips by public transport	17.2	12.6	24
For work trips by car	17.3	4.7	2
<i>(3) Physical accessibility</i>			
Distance from home to work (km)	14.4	12.3	34
Distance from home to usual shopping location (km)	11.3	1.3	31
Commuting time by foot (minutes)	42	35.1	15
Commuting time by public transport (minutes)	59	53.1	39
Commuting time by car (minutes)	62	40.7	3
<i>(4) Activities and durations</i>			
Number of separate activities listed in diary	17.7	7.6	28
Duration of all travel episodes (minutes)	144.3	95.4	19
Duration per travel episode (minutes)	60.1	37.9	37
Discretionary hours per day	4.5	1.4	40
Total number of trips per day	7.8	2.8	46

Table 6.2: Averages and standard deviation for selected travel indicators, KIE, Thika Highway.

Travel indicators	Mean	Standard deviation	Sample size
<i>(1) Geographic range (km)</i>			
Maximum distance from home	14.7	6.3	44
Maximum distance from city centre	18.3	5.4	48
Maximum distance from primary workplace/school	1.2	3.5	36
	5.6	9.2	43
Total distance of all travel episodes	18.9	13.2	44
Mean distance per trip			
<i>(2) Transportation capability</i>			
For all trips regardless of mode	9.9	9.0	48
For work trips by foot	5.7	3.3	21
For work trips by public transport	19.5	13.2	22
For work trips by car	16.8	11.7	5
<i>(3) Physical accessibility</i>			
Distance from home to work (km)	17.4	13.6	48
Distance from home to usual shopping location (km)	12.3	1.1	47
	47	11.3	17
Commuting time by foot (minutes)	68	72.5	38
Commuting time by public transport (minutes)	53	72.8	6
Commuting time by car (minutes)			
<i>(4) Activities and durations</i>			
Number of separate activities listed in diary	12.8	5.4	12
	100.4	36.7	34
Duration of all travel episodes (minutes)	49.3	22.7	40
Duration per travel episode (minutes)	2.7	1.2	48
Discretionary hours per day	4.9	1.1	48
Total number of trips per day			

These results show that the pedestrians on the footbridge at Roysambu-Githurai travelled to more destinations (more mobility) and participated in a greater variety and number of activities relative to Mwiki and KIE. The KIE case registered not only the least activity, but also the least range of activities in which pedestrians on the footbridge participated. There could be various reasons for these discrepancies. One could be the different land use patterns around the footbridges. At Roysambu-Githurai, the footbridge is located in an area flanked by heterogeneous residential areas and densely populated informal settlements⁷⁶. The residential catchment is larger than the other functions contained in adjacent neighbourhoods. At the KIE footbridge the land use comprises formal residential use on one side of the highway and formal institutional use on the other side. The institutional use side of the highway is particularly deserted as access into it was restricted by the construction of a new kerb barrier causing the commercial functions to decline.

The results may possibly be understood as a reflection of how suitable infrastructure design is to existing local conditions. Different locations have different accessibility, inclusivity and mobility in the locations along the transformed road networks. Variations of data of travel indicators are greater on minimally transformed roads and fewer along most radical transformations. Minimally transformed road networks are relatively more accessible and more inclusive. Therefore, it is deducible that the transformation or expansion of the road network does not necessarily translate into better accessibility or connectivity.

6.1.3 *The old city versus the new city*

There are noticeable differences along the highway between the case study areas in the metropolitan region and the more formal central city. This is what I call the differences of the new city and the old city. Nairobi's urban development continues to take on a radial pattern—the centre being the concentration of important administrative and commercial functions—as, progressively, the marginalised majority are pushed into the metropolitan periphery. The metropolitan periphery is the new city. This new city has developed its form and character out of the strategies its citizens employ to compete with the old city over urban opportunities of various kinds: commercial, residential, industrial, communal and so forth. These opportunities generate and are simultaneously generated by human activities: in other words they need to attract as many city residents as possible for their continued sustenance. In order to attract business and use from the residents of housing areas flanking them as well from the users of the new highways the new city has evolved some distinct features:

⁷⁶ This deduction is made from the data provided in the Kenya National Population and Housing Census Report, 2009.

(i) In the new city competition for business manifests in the way the layout of everyday functions. Functions normally located within buildings in such formal districts of the city as the central business district are placed in the open interface between the buildings and the new highways and products, signs and services are displayed on the exterior within the space of the highway (see plate 6.3). In the new city products and services are prominent and where they cannot be displayed outside they are painted onto the building, including even on the windows. In fact this placement of products, signs and services is so salient that, with regard to visual impact, it subjugates the adjacent buildings. This situation appears to be consistent in all building types flanking the new highways except for purely residential buildings. This display of functions usually located in the inside of buildings is both a strategy for the new city to draw opportunity from the new highways and also a to compete with the old city for regional business. One vivid example of this happens at the Eastern Bypass: tens of restaurants staff stand by the highway to tout their food products and to direct motorists into their premises and garrulously negotiate prices. The food is supplied, prepared and cooked outside at the front of the restaurant rather than in a kitchen at the back. Patrons observe these animations and choose the food they want to eat before they get into any of the numerous restaurants. All preparatory activities and negotiations take place at the front of the building in the space next to the highway. Patron seating is inside partly-open restaurants. Small to medium-sized industries also conform to this arrangement of space: machinery and products are displayed at the building front in space that is visible from the highway. In the old city functions are entirely accommodated



Plate 6.3: A scene at the highway in the new city. Activities are more informal compared to the old city and are located more visibly in the building/highway interface. (Source: Author)

inside buildings. Display is done in fortified windows at the shopfront. Buildings are visually dominant .

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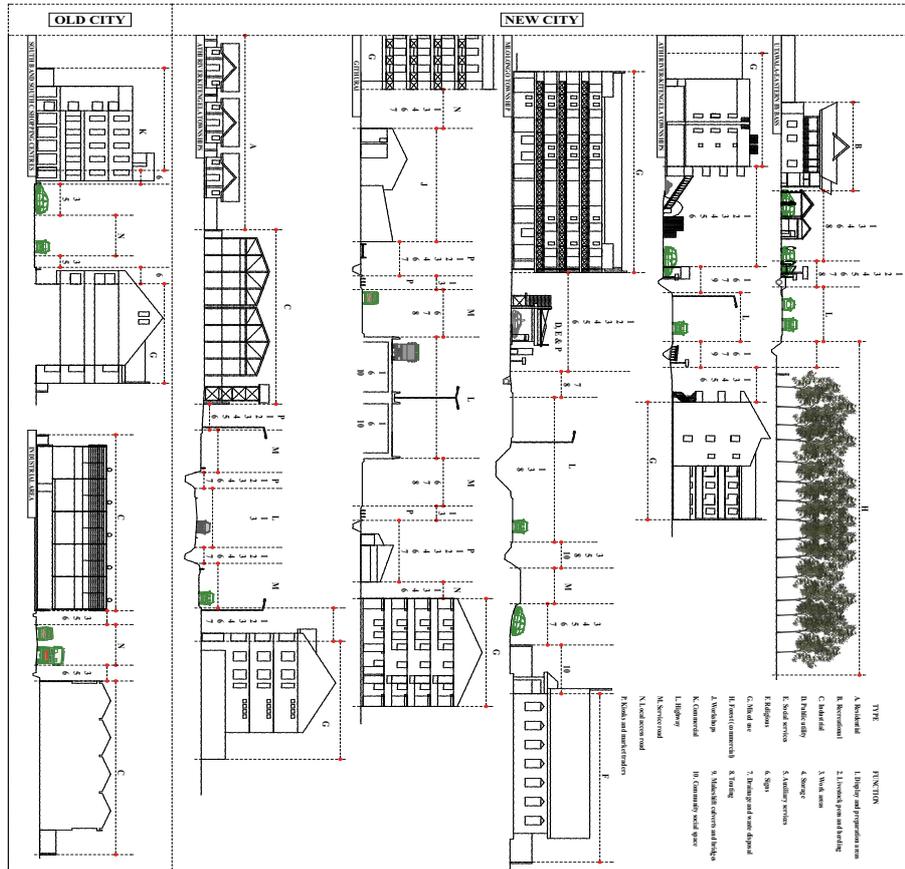


Figure 6.1: A diagram comparing the interface relationships of activities, products, signs, roads and buildings in the old city and the new city. (Source: Author)

(ii) The actions of government agencies and county authorities are inconsistent and even illegal in the new city relative to the old city. In the new city, the county governments host events informally in the space of the highway. Planning has unswervingly failed to keep up with city growth. Among the spinoffs of this inadequacy

is the dearth of public space in the new city. The resort of county governments, then, in the wake of this is to hold public events in the space of the highway that has since become, by default, public space. For instance, in the County of Machakos that is within the Eastern Metro Region, the county government built public restrooms and a parking for county vehicles in space in which buildings were demolished at Mlolongo to make way for the expansion of the Mombasa Highway into a dual carriageway (see plate 6.4). The location where these restrooms and parking have been built do not make use of pre-existing spatial links or any other public services in the area or the locations at which circulation of people and vehicles is concentrated. They are placed so as to be visible and accessible directly from the highway (another violation of highway design) so as to make a political statement. The same kind of formal appropriation of informal space happens in Kajido County which is located in the Southern Metro Region. On 13-16th November 2014, the second Kajido County business Expo was held in Kitengela Township right by the roadside. On any other days of the week informal activities happen there (see plate 6.5). This resort of formal government to informality feeds off local knowledge and everyday life; that the locations where (temporary) informal activities happen by the highway are the areas where multitudes congregate daily. This is where public statements may be made to majority citizens because it is there that initiatives laden with political overtones may possibly elicit firsthand reaction. As Bishop and Leslie (2012: 35) put it,

“Temporary activities also resonate with political agendas. They can be made to happen quickly and can therefore animate spaces(...). They can house ‘crowd pleasers’ for a relatively low capital outlay and most importantly, no perpetually recurring revenue costs. And politicians like nothing better than a ‘quick win’.”



Plate 6.4: The incumbent President of Kenya and the incumbent Governor of Machakos County officially open a public restroom built within the road reserve in Mlolongo Township on 14th November, 2014 after the road transportation infrastructure transformations. (Source: Governor Alfred Mutua official Facebook profile)



Plate 6.5: A stand at the second Kajiado Business Expo, 13-16 November, 2015. This Expo was held in inclement weather beside the highway in Kitengela Township, the largest township in Kajiado County. The lack of public space or county buildings in Kajiado County to accommodate exhibits as well as the vitality of this location were likely consideration in the choice of the Expo's roadside location. (Source: Author)

6.2 A “READING” OF TRANSFORMED SPACE?

This section is an analysis of the case study areas based on the surveys I carried out about the reason why informal activities are located in certain spaces along transformed road transportation infrastructure. The section responds to the question about why people respond the way they do to these road transportation infrastructure transformations. In it are clues as to how people “read” transformed space.

6.3 LOCATION CHOICES AND ADAPTATIONS

In my field study I enquired about the primary reasons for the existence of activities along highways in the case study areas and how spaces along the highway are adapted to suit various needs. Through the results of this enquiry I came to understand something of the way people in the Nairobi Metropolitan Region respond to urban transformations specifically the transformation of road transportation infrastructure. Though I unravelled the factors affecting the urban process in the analysis detailed below, in actuality these factors are related in complex ways so that it is impossible to disentangle and measure them singularly and objectively. In fact my point was to document and describe their patterns rather than seek to measure them.

First, I came to understand transformations as a set of performative processes defined by the human condition and rooted in peoples daily experiences. The urban process is socially produced as people affect space by their own interpretations of that space and their interactions with others through sets of what I refer to as **human factors**.

Second, I came to understand transformation as a product of the qualities of the physical space in which performative processes are produced and reproduced. The urban process is formulated in corporeal space delimited by **physical factors**.

Third, I came to understand transformation as a simultaneously exchange between people’s experience of space and the physicality of space on which those experiences rely; a series of dynamic shifts or flux that I refer to as **human-physical factors or composite factors**.

My understanding of the relationships of these factors and how they contribute to the urban process are described graphically by figure 6.2 and figure 6.3 respectively:

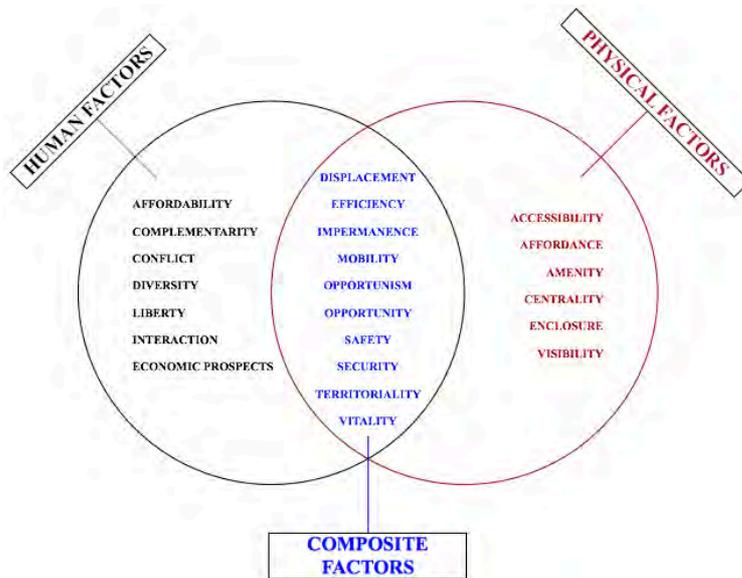


Figure. 6.2: A Venn diagram of factors affecting the urban process

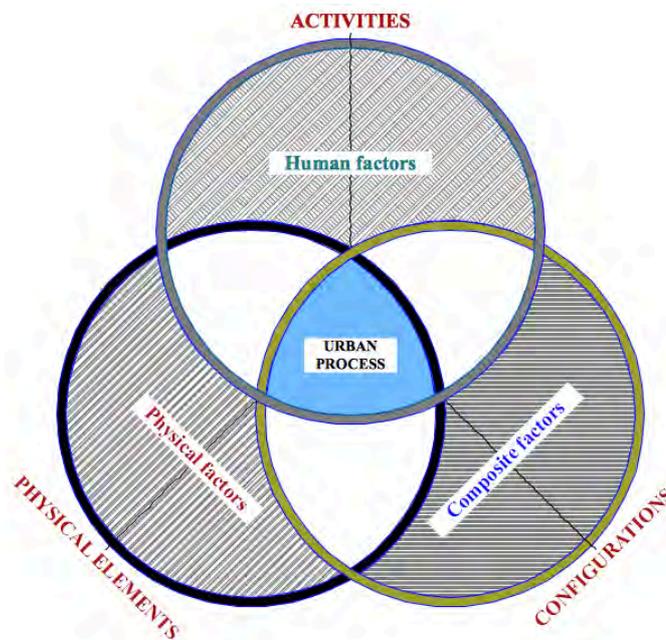


Figure 6.3: A diagram showing the relationship of factors affecting the urban process.

6.3.1 Human factors

Human factors are those conditions arising purely out of human relationships and activities. They are expression of social relationships and structures in space and time. Human factors determine locations in space by determining where individuals and groups are located in society and how individuals and groups opt in or opt out of the choices available to them at their locations within their social structure. Human factors include the following:

Affordability is the ability of individuals to operate their business and to purchase goods and services for their needs with the aid of their disposable incomes. Janet Odoyo, a fishmonger at Utawala explained that in order to sustain her family she had to find a location for her activities that would not demand a heavy capital investment in rent and equipment or be located far from her home. This was how she could afford to operate her small fish business. In my interviews I found out that the location for an informal business may be affordable to its owners in various ways; through demanding low rents or no rent, through eliminating or minimising transport costs from the owners home and sources of supplies, through the prevalence in the neighbourhood of low prices for basic commodities and supplies, through access to free recreational activities, through access to capital for small businesses, through access to opportunities to sustain sales—such as exposure of the location to pedestrian circulation or public transit—and through the availability of a range of opportunities to make a living that do not require formally acquired skills.

“I do not have sufficient funds to rent space for my business in a commercial building so I operate here (in the open) where I do not have to pay rent.” –Janet Odoyo; fishmonger at Utawala.

“I get here through means of public transport that I can afford (with my monthly wages); by bus, and boda boda.” Agnes Karimi; receptionist at Mlolongo.

“I can live and work right here! I saves me from spending cash everyday on transport.” –Kelvin Mugambi; cobbler at Mlolongo.

Complementarity/Competition refers to the rivalry between businesses or activities selling the same product(s), or services. Once a specific product is associated with a particular location in which it is offered, customers visit that location looking to compare different brands of that product on offer as well as their prices. Businesses then are compelled to compete for customers. This competition generates sensory elements in space, such as advertisement boards, graffiti and wall posts, touting, playback and music from hi-fi systems, open air or trailer truck performances of dance and stand-up comedy and so forth, that target consumers in an effort to draw their attention to a business or activity or set of activities at the expense of other similar businesses.

“There are many contraband and fake construction materials sold here that compete with the products I stock in my business. I report (to the police and the manufacturers) but nothing gets done. I think (the other stores) are in cahoots with the police.” –Alex Mbugua; hardware store owner at Mlolongo.

“I buy diverse stock so as to offer my customers variety. I aim to outcompete rival businesses located nearby.” –name withheld; cosmetics retailer at Githurai.

“Though there are many clothes businesses here, I ‘fight’ for the customers looking for clothes at this location by going out of my way to show pedestrians my products, negotiate with them and offer them lower prices.” –James Gathua; clothes seller at Githurai.

“No one else sells wholesale beer in this neighbourhood. There is no competition for my business in this location. My business makes money.” –Isaiah Mwangi; beer distributor at Utawala.

Conflict is the social or functional discord caused by the expression of opposite attitudes, intentions and realities between different heterogeneous activities, different modes of transportation and different categories of road users. Conflicts may occur due to oppositions in mode of operation such as legal/illegal, formal/informal, and control/contestation as well as the fight between various cartels, groups, communities or individuals to control the opportunities of the highway.

“There are frequent altercations among motorists in this location. Some motorists do not give others way at this intersection. I take advantage of (the ensuing gridlock) to sell my products to motorists and passengers caught up in the jam.” –Sally Muturi; hawker at the Embakasi.

“The filling station owner refused to allow us to sell our fruits to passengers in matatus filling up at his station. He chases us away claiming that we interfere with traffic into his premises. But it’s untrue! We decided to request matatu drivers (with full passenger loads) to fill up at the next filling station. (We) give them fruits for free in appreciation.” –names withheld; two fruit vendors at Mlolongo.

“I keep bribing county inspectors so that they do not arrest me or close my shop or confiscate my products. Sometimes they bring up trumped accusations against me. I do not know if the other businesses here have something to do with it. I would fight if necessary to keep operating here, but I cannot do it alone.” –Michael Moseti; barber at Utawala.

Diversity/Choice refers to the availability of options for economic, physical and social activities in a given location: the greater the number of options, the more the

diversity/choice that the location offers. Choices among activities reflect a variety of environmental conditions in road space; from the most animated and crowded to the most secluded and quiet. Locations with greater diversity are able to support different groups of people or individuals on the basis of their preferences.

“I interact with many different people in this location. The more people I get to interact with the more word spreads about my salon.” –Keith; hairdresser at Githurai.

“I find this location lively and entertaining: there are always interesting things and different activities happening here. When I have time I get to choose which activities to engage in from among the many different activities here.” –Fiona Kakai; housewife at Githurai.

Liberty is the expressed ability of individuals to take advantage of and enjoy the opportunities in communal space without infringing on the rights of other individuals or groups who operate within the same space. It is also the ability of individuals and groups to negotiate with or circumnavigate institutions that hold the power to proscribe or license their activities so that they can conduct their activities in the spaces of the highway.

“I am here because I am not harassed (by county inspectors) here. I have experienced (that kind of) harassment at other locations before. This location is not frequently by county inspectors.” –Wanjiku; hawker at Utawala.

“I go to the footbridge to unwind and see what is happening there. I know there I cannot be chased away (by business owners). I can stay there as long as I want.” –Wilson Kimani; unemployed man at Mlolongo.

“People seem to mind their own business here. They do not report (illegal) activities to the authorities as long as it does not harm them. So I feel free to do my business here without interference.” –name withheld; hawker at Mlolongo.

Interaction is the need for individuals to contact other individuals so as to represent themselves or their ideas in the space of the informal city. Interaction is required to obtain co-operation, collaboration and exchange in order to make activities in space work. Interaction reproduces itself by attracting and sustaining further interaction. Informal activities, in particular, are based on negotiation and the working around formal legalism and bureaucracy.

“People stop and meet other people here. (When I am here) I see people greeting and talking (at the highway).” –Wanjiku; hawker at Utawala.

“I get to negotiate the prices of my products with my customers even as they move. My bottomline depends on how much I can make beyond the cost price. I have to talk to people to convince them to buy. I keep talking to people.” –Christine Njagi; hawker at Mlolongo.

“I get to interact with my customers here (within the pedestrian path). Business happens (right there) in the interaction!” –James Kithinji; hawker at Mlolongo.

“There is always a crowd of people at this section of the highway. I hear them talking and sometimes get to know what they like (about the products I sell).” –Paul Njenga; informal trader at Kitengela.

Economic prospect is the ability of the individual to move up from lower socio-economic classes to higher social classes, primarily through making an income, in order to afford a better standard of living. Individuals who located their activities along highways saw opportunities present there—particularly opportunities to make an income—as a facilitator of their own economic prospects.

“I see my business growing here.” –Wycliffe; shopkeeper at Utawala.

“When I began, my food business was small. But as the highway has expanded my business has also grown incrementally. And there is space to expand it in future.” –Mercy Wambui; restaurant owner at Githurai.

“The town here is growing fast! I see more peoples (here) now than I used to see when I started my kiosk (in the 1990s). Businesses are doing better now. My business will for a long time remain here.” –Michael Mutinda; kiosk owner at Kitengela.

In the surveys I carried out in the four case studies, I found out that responses associated to complementarity and affordability were the salient human factors. The number of responses associated to human factors varied among the case studies (see chart 6.0 in Illustrations: data charts) and that this variability was time-based (see charts 6.1-6.5 in Illustrations: data charts) in a manner to reflect the vagaries of the highway. This finding should not be misconstrued to imply that the human factors identified also varied in their importance to respondents: it means that some factors were taken for granted when circumstances on the highway were more favourable in light of those factors. For instance, accessibility was less talked about by respondents during the times of the day when vehicular traffic on the highway was lighter. Conversely, during times of the day when there was heavier traffic on the highway accessibility was discussed more by respondents. Observation shows that these factors worked in tandem to make the locations work as they did for their actors.

6.3.2 *Physical factors*

Physical factors are those conditions that are determined by the materiality of the urban environment. The materiality of urban space is the way in which natural resources as well as the factors of production are presented in space. Physical factors include:

Accessibility is the individual judgment concerning the ease of getting to different destinations from a specific location or the ease of getting to a specific location from many different locations which form the map of the life choices of the individual. The salient consideration for accessibility is how close workplaces, social amenities, businesses and schools are to affordable residence.

“It is easy to find transportation to many parts of town from here.” –Noel Muhui; tailor at Utawala.

“I get here easily from my house.” –Anne Waithera; fruit and juice vendor at Utawala.

“I am lucky that my business has always been here. There is no other place in Githurai where I can cross. Here, near this roundabout, it is easy to find my way across the road to the other side of the highway. I operate this business (myself) and I need supplies from the market on the other side of the highway.” –Alice Makena; food vendor at Githurai 44.

Affordance refers to the condition of an environment to be read to facilitate the carrying out of a variety of activities. An overpass, for instance, by providing an overhead plane that functions as a both a shelter above road space and a structural element that facilitates informal storage and display offers affordance for informal activities that need a roof for functional purposes or for purposes of human comfort.

“I obtained a formal lease from the property owner to set up my stall in this (open) location.” –Ernest Kariuki; clothes stall owner at Utawala.

“I prefer this location because of the cover it provides. My customers prefer it too. (...) Women walking from the market (laden with goods they have purchased) to the Githurai 44 bus stop put their luggage down and rest for a while (in the shade here) on hot days. On rainy days too people take cover (under the overpass) from the rains. Customers linger here for longer and I sell more cobs of maize.” –George Muchai; maize roaster at Githurai.

Amenity refers to the choice of location based on the availability in the location of essential utilities, basic services and environmental conditions that enable modern standards of living for individuals and groups. The availability in a location of connections to essential modern utilities and conveniences such as water supply lines, power supply lines, and sewer lines, of basic institutions such as schools, hospitals and

of places of recreation and socialisation enables individuals to choose to live a modern or postmodern urban lifestyle.

“My business needs a connection to a sewer line. (...) I have to drain animal carcasses (of blood). My business is served by a sewer line passing a few metres from the highway.” –George Kilonzo Mutune; butcher at Utawala.

“I have to maintain the quality of my saplings. They need to look healthy. (...) My business needs cheap water. Under the bridge over there water (from the Nairobi River tributary) is freely available to me.” –John Juma; tree nursery owner at the Eastern Bypass.

“I need to operate a pump at the car wash. Here at the highway it is easy (for our business owner) to get (his premises connected to) the power lines.” –Timothy King’ori; car wash worker.

“This location is perfect for our activity. We do not have parks in our neighbourhoods.” –Justin; Rollerblading instructor.

Centrality refers to the central placement of a location with reference to surrounding popular destinations or with reference to the destinations that define an individual’s predominant social, cultural and economic choices in life. Centralized locations are, on average, less distant from the aforementioned destinations than peripheral locations. I found out that choices of location were based on certain reference points within urban space around which individuals organized their urban experience.

“This location is far from the Nairobi city centre. I go there to buy supplies for my shop.” –Belinda; draper at Utawala.

“I am looking for a location closer to the Eastern Bypass.” –Ernest Kariuki; clothes stall owner at Utawala.

“I only go to the market when it is absolutely necessary; once a week. I go to Wakulima Market in (central) Nairobi to get a variety of groceries for the weekly needs of my business.” –Sarah Wairimu; food vendor at Utawala.

“This location is close to new residential and commercial developments. When property developers need to sell the property (they have developed in the neighbourhood) they ask me to handle their clients on their behalf and to show them the property because my office is within the neighbourhood.” –name withheld; property manager at Mlolongo

“I use this highway because it links (this part of town) to the central business district and other important destinations in the Nairobi Metropolitan Region.” –Beatrice; engineer driving along the Eastern Bypass.

Enclosure is the degree to which the physical elements that form a boundary to a space are physically defined. On an urban street, the degree of enclosure is determined by the continuity of the built or natural fabric on both sides of that street. A boundary can be soft, hard, continuous, discontinuous, permeable or solid. These qualities then affect the enclosure of space.

“The land adjacent to this highway (Eastern Bypass) accommodates many new businesses and buildings.” –Macharia; bus conductor on the Utawala route.

“The (Mombasa) highway is lined by beautiful buildings! (...) I look (out the window) at them on my way home.” –Felistus Obare; student at Utawala.

“Some of the land along the highway is empty. (...) The county government should encourage more construction along the highway on these empty lands so that buildings can create a continuous enclosure along it.” –Nickson; motorist at Utawala.

Visibility is the quality that makes activities noticeable. Noticeability though overtly visual could be achieved by other means including sound and smell. Various activities employ a variety of means to attract the attention of potential customers including putting up signs on buildings or within the road space, playing particular kinds of music, putting on roadside shows, holding dancing competitions, displaying products conspicuously, including invasively in road space, and, using the sounds and smells of food and food preparation.

“People can see me from the highway.” –Daniel Ngugi; fruit and juice vendor at Utawala.

“My business is visible here.” –Jeremy Gachau; barber at Embakasi.

“My products are visible to potential customers as I hold them up and walk with them along the highway. That is how I attract attention and enquiries and get to sell my products.” –Mandela Wafula; hawker at Syokimau.

Similar to the trend I observed in my analysis of human factors in the four case studies physical factors were variably important to respondents (see chart 6.6 in Illustrations: data charts) and their variance was also time-based (see charts 6.7-6.11 in Illustrations: data charts). The trend was that the number of responses associated with physical factors depended on the simultaneous happenings on the highway: the impact or requirements for physical factors are more prevalent during the mornings and evenings when traffic on the highway is heavier. Again, the variant number of responses associated with physical factors cannot be misconstrued to mean that factors were not equally significant: it means that some factors might have been taken for granted in the case studies. For instance, in locations where activities did not depend on the

availability of requisite amenities and utilities like water, power lines, sewer connections and so forth (especially where activities were observed to be more dependent on mobility), amenity was not considered as important as, say, affordability. But both were observed to be essential to the arrangement and performance of activities and of the adaptations observed on or along the highway. The salient physical factors are visibility and accessibility.

6.3.3 Composite Factors

Composite factors are those conditions that are shaped simultaneously by physical factors and human factors. These factors originate from the aspects of the highway that depend on the materiality of urban space as well as the social relationships that affect how that materiality is perceived. They are determined by human behaviour as well as the environment in which that behaviour is expressed. As such they can be considered as configurations of space inscribed with traces of activity in a mutually reinforcing manner. Composite factors include:

Efficiency refers to the effort expended, comfort sacrificed and time spent in performing a given activity or undertaking a set of complementary activities. The less the time and effort spent in effectively and profitably performing an activity, the more efficient that activity is to its operators and benefactors. Further to this, if performance of an activity is achieved with little sacrifice of comfort—where comfort rather than referring to avoidance of bodily strain refers to the maintenance of good human health—then the activity is deemed to be efficient.

“I live and work right here. I get to work whenever I need to get to work. I am (always) on time.” –John Gitau; cobbler at Githurai.

“This highway is a direct route to my destination. That’s why I prefer to use it.” –David Njuguna; motorist on the Eastern Bypass.

“I spend less time to get to my destinations along this highway compared to before when there was just a dirt road.” –Peter Onderi; bus driver at the Eastern Bypass.

Displacement is dislocation or expulsion. Because Nairobi’s urban space is intensely segregated vulnerable individuals and marginal communities find themselves expelled from the more formal parts of the city to peripheral and “hidden” spaces. They then find themselves, by the fact of expulsion, in public space of which the most prevalent type is road space. This displacement generates features of impermanence.

“I am here because I have no choice. There is nowhere else I can locate my activities. (...) Two months ago (City County of Nairobi askaris) threw me out of the place I used

to operate my business at Airport North Road.” –Dorcas Wavinya; hawker at Embakasi.

“I do not have a fixed address where I can conduct my business. (...) I have no home and no money to rent a space for business. I just move from place to place and try (as much as I can) to avoid confrontations by county inspectors.” –name withheld, hawker at Embakasi.

Opportunism is the establishment of an activity on the basis of situations created by disruptions in the functioning of other activities and sudden changes in patterns of urban space.

“I pray and wait for a traffic jam to occur (here) so that I can go on the highway to sell to motorists and passengers in buses and matatus.” –Sharon Chege; food vendor at Embakasi.

“I (take advantage of) the traffic jams that occur on the highway to sell motorists and the passengers who use public road transport.” –Pauline Kabutu; food vendor at Githurai.

“I set up my business here just intermittently. The location of my business depends on revenue and my own consideration of the opportunities available to me elsewhere in the city. (...) Sometimes I leave here. (...) I sell at Ngara, too.” –Mary Mwendé; second-hand clothes dealer at Utawala

Opportunity refers to the extent to which a place offers individuals and groups the conditions to meet their aspirations. Opportunity to most people by the highway refers to the economic viability or profitability of their activities in terms of money. However, interviewees did not consider actual profit to be as important as their perceptions of their interaction with other individuals and businesses and the degree to which activities are animated in a location.

“I find customers easily on the highway or along the highway.” –James Chege; boda boda motorcyclist at Embakasi.

“I found sufficient water and grass for our herd of livestock on the road reserve along the highway. We head there (to the area up north) during the drought.” –Peter Mulu; nomadic herdsboy at the Eastern Bypass.

“I earn my living working here.” –Florence; street sweeper at Embakasi.

“I am employed here.” John Wekesa; security guard at Utawala.

“I find clients among motorists who stops at this location before proceeding to the residential area. And motorists always stop here!” –Bernard Njenga; shopkeeper at Utawala.

“There is a high demand for my business here.” –Nancy Atieno Miruka; boutique owner at Githurai, and, Margaret Mugure; liquor store owner at Mlolongo.

Impermanence refers to constant change and how activities respond to this change. Activities may be exposed to changes due to sudden spatial transformations, displacement, conflicts or changes of weather.

“There is no shelter for me, my business and my customers from rain or sun. I carry out my business in accordance with the weather.” –Sarah Wairimu; food vendor at Utawala.

“My activity is disrupted by adverse weather mostly rain. But (that’s) okay. (After all) I do not pay rent (for this place)!” –John Odindo; shoe shiner at Mlolongo.

“There are no constructed shelters by the highway for customers to linger and shop (a little more) from my business. People are only here for a while then they go away.” –Priscilla Mukoo Munene; kiosk owner at Utawala.

Mobility refers to the degree and speed of movement of people, goods and vehicles along the highway. Individuals expressed their mobility on the highway as the amount of time they used or lost in making journeys on the highway. Though interviewees did not formally keep accounts of the time they spent moving through various modes of transportation from specific locations to other locations using the highway, they had their own experiences and expectations of how much time they spent on journeys on the highway. I refer to this individual perception of time as phenomenological time. Mobility varies depending on the circumstances on the road including the degree of congestion of vehicular traffic—such as during rush hours, accidents, breakdowns, conflicts among various modes of transportation, the configuration of routes of movement, choice of routes and physical barriers to movement.

“Traffic jams sometimes occur on this highway. I get irritated wasting time like that in that jam.” –George Kamau; bus conductor on the Utawala route.

“I drive faster than I did (before the highway was built). I get to central Nairobi really fast!” –Cyrus; bus driver on the Embakasi route.

“Traffic jams sometimes occur on this highway. It is (...) annoying wasting time in such traffic jams on an expanded highway! I thought traffic jams would end with the

expansion of the (...) highway.” –Stephen Miyogo; matatu driver on the Githurai 45 route.

Safety is the quality of an environment defined by the protection it offers individuals from accidental injury or injury from negligence or from natural hazards.

“This location is dusty (during the dry season)! I get off the highway sometimes just to take break from my job so that I can breathe.” –Eunice; cleaner at Mlolongo.

“This location is noisy. I block my ears using my earphones until customers come by. But business is good!” –name withheld; mobile banking agent at Githurai.

“Sanitation is poor here. We kiosk owners (collectively) have to buy water from water vendors everyday to keep the yard clean.” –Rebecca Nzisa; kiosk owner at Mlolongo.

Security: this is the quality of a place that makes individuals feel physically and psychologically protected from acts of crime, primarily those that result in physical harm or the theft of property.

“The highway is secure these days for motorists because of the presence of continuous vehicular traffic. Before it was completed I heard of motorists being robbed. (...) I avoided it.” –George Otieno Okoth; driver on the Eastern Bypass.

“This part of the city is a low crime area (now). So I do not feel any fear operating from here.” –Ben Oiti; wholesale trader at Utawala.

“My stock of goods is sometimes stolen here. I have to keep watching (...) because there are so many people. And (some of them) are thieves!” –Anastacia Waithera; grocer at Githurai.

“Some people get robbed along the highway at the informal market! I am always alert there.” –Fiona Kakai; housewife at Githurai.

Territoriality refers to the identification and demarcation of a place as separate from other places. This imbues the place with qualities of legal and physical appropriation that define the extents of that place including codes of appropriate behaviour, thresholds of entry or exit and the right to grant or deny access. Found many examples along the road of territoriality. At the section of highway along the East African Portland Cement Company’s factory there were five unofficial road signs in a length of 100 metres erected by the company after the transformations prescribing behaviour for motorists and people waiting at the bus stop. Another private road into an industrial area was marked with signs restricting access and barricaded with boulders (see plate 6.6). At the turning from Namanga Road into the Acacia Avenue a contractor had placed large rocks to prevent trucks from either entering the lane or using the turn into the residential area

to make turns into Bamburi Road. A concrete median at the mouth of Bamburi Road prevented trucks from turning directly into it (see plate 6.7). Trucks using the turning to get into Bamburi Road had according to one female resident living on Acacia Avenue, Njeri, created large potholes at the turning. A resident had then negotiated with the contractor to move boulders to the turning so that only small private vehicles could navigate into the turning. At Mlolongo several business owners also said that they use movable signs or barriers to restrict entry for certain pedestrians or vehicles into their fronts so as not to disrupt the operations of businesses.

“I own this building. I organise other building owners and people around here to keep the shopfront clear of the (general) confusion in this town.” –Alex Mbugua; hardware store owner at Mlolongo.

“I ask truck drivers not to park in front of my business. They block the view from the highway!” –name withheld; kiosk owner at Mlolongo.

“I have learned to share my space with vehicles. (...) Anyone can come here. That’s how I cope with people parking here! They soon drive off (anyway).” –Daniel Ngugi; fruit and juice vendor at Utawala.



Plate 6.6 Newly constructed roads marked with unofficial signs prescribing behaviour and barricaded with boulders to restrict public use at Athi River and Ruaraka. The pictures were taken in 2015 after the road transportation infrastructure transformations. (Source: Author)



1. 300 mm high stone median divider island
2. Exit path of trucks at interchange to industries on Bamburi Road
3. 300mm high reinforced concrete median. Trucks can't turn from here into Bamburi Road.
4. Trucks turn here. Potholes created by U-turn trucks on new road at the entry to Acacia Avenue.
5. Boulders placed by private contractor at the behest of Acacia Avenue residents to prevent trucks turning here to get to Bamburi Road.

Plate 6.7(above) and Map 6.0 (below): An example of territoriality at Athi River after the road transportation infrastructure transformations. The boulders placed at the entry to Acacia Avenue (above) are not placed there by accident. (Source: Author)

Vitality refers to liveliness or animation. According to the responses of people I interviewed I came to understand that locations said to be characterised by vitality are so because they are (1) located in the most concentrated paths of movement and (2) attract, and accommodate activities that are not only animated, but are directly or indirectly complementary. This complementarity of activity is produced and reproduced as more people and activities accumulate and as that accumulation becomes more noticeable in space as an increase in the number and range of activities. Consequently, it was important not only to be in a location with a mix of activities, but also where, according to Grace Mumbi, a self-professed frequent customer of clothes stand at Githurai 45, “*I can see many activities, meet my friends and neighbours, and others can also see me and talk to me. (It is full) of activity.*”

The location in Githurai shown in plate 6.8 is where I received the most responses related to vitality.



Plate 6.8: An example of a vital location at Githurai. The location contains a variety of transportation modes at relatively lower speeds as well as a miscellany of goods on display to pique the interest of pedestrians and public transit passengers. The senses of both participants and spectators of this activity are stimulated by a cacophony of sounds, sights and smells. They can touch, taste and negotiate the prices of various products on offer. (Source: Nicholas Kipchumba).

“There are many people here. Everyday. Many things happen here!” –Grace; mobile phone shop owner at Embakasi.

“I am never bored here. There is always something interesting going on.” –Cynthia Wanjiru; mobile banking agent at Githurai.

“Areas adjacent to the highway are more lively than was the case before the highway was built.” –Ndegwa; electrician traveling by bus along the Eastern Bypass.

“This location is so ‘active’. That is why I started my business here.” –Chris Ngotho; student and small business owner at Githurai.

The analysis of responses associated to composite factors in various case studies as well as comparatively—across the case studies is contained in charts 6.12-6.17 (see Illustrations: data charts). The responses associated to composite factors show a complex pattern relative to those associated to human factors and physical factors. Certain factors—like efficiency, impermanence, mobility, opportunity, opportunism and territoriality—conform to the pattern seen in responses associated to human and physical factors. They are correlated to the heaviness or lightness of vehicular traffic on the highway. Others do not conform to the trends observed with the responses associated to both human and physical factors: they are context specific and correspond to the level of activity but not necessarily the heaviness or lightness of vehicular traffic on the highway. For instance responses associated to displacement were found only at Embakasi (see chart 6.12 in Illustrations: data charts). Responses associated to safety, security and vitality corresponded to the levels of roadside and pedestrian activities as well as vehicular traffic speeds—rather than volumes, on the highway. The salient composite factors across the case studies are opportunity, mobility and vitality.

All the factors, human factors, physical factors, and the composite factors (human-physical factors), are phenomenological. That is to say are based on respondents’ interpretation of immediate situations that they find themselves in (that constantly shift) as well as the spatial potentials of the location from the point of view of the respondents at particular points in time as well as from their memories of road space.

6.4 SPATIAL CHARACTERISTICS OF SHIFTING ACTIVITIES ON NAIROBI’S HIGHWAYS

I mapped perceptions, adaptations and physical elements of transformation in space to establish if any patterns exist. Themes concerning the instability and shifts of activities in road space recur and mutually reinforce each other. They include:

Heterogeneity is the notion that different places have different potentials for various activities. Potentials of place are seen and judged in terms of profits, vitality, sociability or visibility. Potentials are autonomous or layered and are dependent on the prevailing situation on the highway. People who recognize this are able to choose to vary their activities to suit the flux in potentials of places in road space. They could for instance relocate their activities from one place whose potentials have plummeted to another that has higher potentials, or to cease, for the time being, the set of activities whose potential has plummeted, or to change from one set of activities to another with higher potentials. Mwangi Mureithi, a hawker and resident of Githurai 45, narrated an example of this to me. He said that his activity on the highway depends on what is going on. He said, *“I do not sell one specific item or work at one place (throughout the day). I work on the highway hawking various goods according to the time of day and the place. In the morning I sell food to pedestrians at the roundabout and to people resting (at the overpass)... (Later on), I operate at the bus terminus. I sell clothing and electronics to people coming back from work (at the bus terminus) because the bus terminus is very busy at that time.”*

Territoriality is the notion that space needs to be defined in order to create boundaries for various activities. The boundaries so defined then determine who has what rights at what time(s) to engage in what specific (sets of) activities in road space. Along the highway especially where informal activities occurred there were arrangements about who could occupy certain spaces and for how long they could occupy them. There was coordination among stall owners about who could join the informal trade that occurred in the various spaces that they used for their trade. Kilonzo, an informal trader at Mlolongo explained to me that he and several other informal traders operating near the Mlolongo bus terminus had agreed on how to cooperate and also how to protect their space from invasions by other traders who did not belong to their territory. He proffered, *“I have been operating here for five years now. (Other informal traders and I) organised so that we could fight competition because this town has grown since I first came here. Now there are people all over this place and some people want to take advantage (of our place at this terminus). We have to be careful who operates here. It belongs to us. And we want our customers to feel safe and continue coming here.”*

Impermanence refers to the transience of activity as well as the notion that the qualities of space vary with time and as such activities should vary even if they occupy the same place at different times. Therefore possibilities remain open for all that could happen in space. I noticed this particularly when people revealed that their activities may be performed differently or changed entirely to suit varying situations in road space. Impermanence is an instrument employed in order to overcome structural difficulties people face in the setting up of activities that may be legitimate to satisfy the prevalent needs of road users but which may be illegal according to formal rules. Some of the

informal traders had come up with means of carrying their merchandise with them. Some had carts, others had demountable display stands, and others wrapped their merchandise in sacks or large pieces of cloth. In this manner they avoided the costs associated with running a permanent operation such as rent, license fees and utilities bills.

Spontaneity is the notion that unforeseen situations generate activity or sets of activities on the highway. Therefore situations are the generator of activities rather than activities being a passive on highways. In all case studies I found cases of people milling around sudden events; accidents, breakdowns of vehicles, protests, evangelist crusades, county events, police highway operations and so forth. The spontaneity of informal activities has an advantage over the static formal urban development set up because the opportunities expressed on the highway can be more directly responded to as they occur.

Opportunity is the ability of the road space to generate a range of activities for different groups of people or individuals. Opportunity is bestowed by physically permanent qualities as well as fleeting and shifting situations and events.

Opportunism is the ability of an activity to thrive primarily due to the sudden occurrence of an adverse situation in road space, particularly a situation where the formally sanctioned uses of road space are critically disrupted. Disruptions may be caused by fortuitous happenings such as road accidents and changes of weather to planned disruptions such as road construction.

Expansion is the choice made to extend space so as to recover lost its qualities. For instance, a business owner whose activities had previously spanned across the highway but has since been forced to operate on a single side—due to the physical enormity and blockage the new highway imposed on the visibility of their businesses, adapts by making his products portable and establishing temporary activities across the highway. By extending his businesses temporarily in space in this manner he seeks to regain the reach to his clients that has been affected by the physical bifurcation of the street.

6.5 A SUMMARY OF CASE STUDIES AND EMPIRICAL FINDINGS ON EVERYDAY PERCEPTIONS OF NAIROBI'S HIGHWAYS

From the synthesis of the characteristics of informal activities that occur on the highway in Nairobi and how they occur informalities can be classified anew. These categories emerge out of my observations of adaptations to transformed road transportation infrastructure network (see table 6.0) which put to question current categorizations of informalities and the tools of modern planning, design and implementation still in use in

the engineering and planning professions in Kenya's public sector. These categories are based on adapted urban elements as well as various types of movement on the highway. The land uses next to the highway are of particular importance in determining the kinds of adaptations that will occur and therefore the associated type of informality. Because this informality is heterogeneous, class distinctions are secondary to the nature in which adaptations occur. I describe the emergent types/categories as follows:

(1) Modal/intermodal processes: These are typological urban processes activated by either the transition from one mode of transportation to another or by specific interludes in travel.

(2) Spontaneous processes: These refer to urban processes that occur as a result of fortuitous and sudden changes in circumstances at intersections, overpasses or at intercalary moments or spaces of discrete journeys. Such fortuitous changes include changes of weather, road accidents, political rallies, processions and traffic jams.

(3) Temporal processes: These processes take place only at certain times of the day or certain days of a week. They are a compromise on the optimal use of road space for singular purposes. Sometimes they are triggered by the absence of alternative spaces for specific activities.

(4) Conflictual processes: When two or more urban processes collide, space is created where in resolving such collisions rather than achievement a zero-sum game there is a mutual reinforcement of complementary activity with concurrent bursts of urban vitality.

(5) Kinaesthetic processes: These are typological urban processes embedded in the nature and rate of movement of various modes of transport. Speed discourages or encourages interactions. Changing movement; movement up, down or sideways elicits local responses. Displays and products are located to catch the attention of the occupants of through traffic. Facades are laden with products rather than signage. An urbanism of products where building gives way to display is created.

(6) Locational processes: Different locations in the city proffer different qualities to prevailing urban processes. Locational signals temper movement and activate reactions that tap the vitality of connections present in place. These locational signals include confluence of traffic, the presence of elements resembling basic architectural elements (walls, roofs, slabs) within road space, stops, waiting, superfluous space and so forth.

Table 6.0: Table of the classification of informal activities resulting from transformation of road space in the Nairobi Metropolitan Region.

ELEMENT/FLUX/ FLOW	TYPE(S)	CONDITION(S)	EXCEPTION(S)
Footbridge	Intermodal Kinaesthetic Locational Modal	Pre-existing connections. Public transit.	Contiguity with institutional or government lands. Restricted vehicular access.
Drainage channels	Spontaneous Temporal	Pre-existing connections. Public transit Climatic conditions.	Contiguity with institutional or government lands. Restricted vehicular access.
Tunnel	None	N/A	N/A
Overpass	Locational Spontaneous	Pre-existing connections. Public transit. Climatic conditions.	Contiguity with institutional or government lands. Restricted vehicular access.
Underpass	None	N/A	N/A
Vehicular traffic jam	Intermodal Kinaesthetic Temporal	Pre-existing connections. Public transit	Contiguity with institutional or government lands. Restricted vehicular access.
Speed bumps	Locational Kinaesthetic	Pre-existing connections. Public transit	Contiguity with institutional or government lands. Restricted vehicular access.
Access street	Conflictual Temporal	Pre-existing connections. Public transit	Contiguity with institutional or government lands. Restricted vehicular access.

Intersection	Conflictual Temporal Intermodal Locational Modal	Pre-existing connections. Public transit	Contiguity with institutional or government lands. Restricted vehicular access.
Retaining walls	None	N/A	N/A
Barriers	Conflictual	Pre-existing connections. Public transit	Contiguity with institutional or government lands. Restricted vehicular access.
Vehicular traffic in motion	Kinaesthetic. Modal. Intermodal.	Intervisibility with other urban elements. Public transit. Speed.	Contiguity with institutional or government lands. Restricted vehicular access.
Main street	Kinaesthetic Temporal	Pre-existing connections. Public transit	Contiguity with industrial lands.

Informality in Nairobi has been viewed as a historical narrative emerging from Kenya's imperial era and laden with myriad social seclusions⁷⁷. Nairobi, just as much of urban Africa, is a dual city with formal and informal patterns of development. Such a pattern, it is claimed, is a recipe for the ameliorative reconfiguration of urban space based on the rigid legalities and gaping inequalities of the historically exclusionary patterns of development established from colonial times⁷⁸. Current categorizations of informality are heterogeneous and spatial rather than legal. However this categorization is concomitant, almost exclusively, to the economic and social echelons of the informal city. This categorization, broadly referred to as diverse informalities, classifies informality into four (socioeconomic) permutations; survivalist, primary, intermediate and affluent. The characteristics of diverse informalities are given in table 6.1:

⁷⁷ Berman, B. 1990, *Control and crisis in colonial Kenya: the dialectic of domination*. James Currey, London; Obudho, R., and, Aduwo, G. 1992, *The nature of the urbanization process and urbanism in the city of Nairobi, Kenya*. *African Urban Quarterly*, Vol.7, No.1/2: 50-62; Anyamba, T. 2006, "Diverse informalities". *Spatial transformations in Nairobi: a study of Nairobi's urban process*. [Oslo]: Arkitektur- og designhøgskolen i Oslo..

⁷⁸ For more on this view see Myers, G. A. 2003, *Verandahs of Power: Colonialism and Space in Urban Africa*, Syracuse University Press, New York.

Table 6.1: Table of the characteristics of diverse informalities (Source: Tom Anyamba)

Category	Survivalist	Primary	Intermediate	Affluent
Type of tenure	No tenure since it is not place based.	Letter of allocation or Temporary Occupation License (TOL).	Secure tenure. Normally Leasehold for 99 years.	Secure tenure. Absolute or Leasehold for 99 years.
Characteristics	Transient in nature with a bias to commerce. Dominated by the urban poor. May operate with or without license.	Place-based and complex. Dominated by low and middle-income groups. Require license from council to operate. Engage in residential and commercial activities.	Settlement-based focusing on residential and few commercial activities. Dominated by middle income and a few high-income players. Settlements can be new or extensions/modifications	Settlement-based biased to residential developments. Dominated by high-income groups. Commercial activities not undertaken.
Impact on built fabric	Minimal or no impact on built fabric.	Most prominent physically and impacts heavily on the built fabric by way of kiosks and settlements. Uses all sorts of materials; second-hand and recycled.	Has large variety of building types. Uses standard approved materials. Built on labour contract at different times and places.	Generates all types of architectural styles; eclectic. Little overall impact on built fabric as they are in low-density zones.
Impact on infrastructure	Prey on water, electricity and sanitation systems.	Make legal or illegal connections to services. Puts additional pressure on carrying capacity of services.	Puts additional pressure on services. Builds services on self-help basis. Doubtful quality of design and construction.	Takes advantage of well-serviced land.
Costs	Requires small sums of money to start up. Pays minimal license fees to council.	Requires tens/hundreds of thousands. Pays minimal fees to council. Pays protection fees	Requires millions of shillings to operate. Pays statutory fees.	Requires large sums of money. Pays statutory fees.

		to vigilante groups/ police.		
Other	Remain statutorily illegal.	Subject to demolition with or without notice.	Development plans may be illegal.	Lack social amenities and may travel long distances to access them.

The categorizations given in as diverse informalities or as informal modernism largely ignores the fact that the informal city does not manifest as a conglomeration of economic dichotomies but as an interlinked growth system that works together across classes. Further its attempt to classify informal urbanism insufficiently explores those spatial processes that go beyond class and are always a reflection of connections or disconnections across the city. The transformation of road networks affects all social classes and reveals the underlying urban processes to be determined by urban growth and also to be based on movement. The transformation of road infrastructure in Nairobi has opened up new areas hitherto not part of the traditional city and has disconnected parts of the traditional city from existing flows. These changes disrupted the traditional dual pattern of city growth and set the stage for new adaptations in the form of new informalities.

6.6 REBOOTING PERSPECTIVES

The analytical framework is quintessentially a contextual guide for understanding the study. Its role is to relate the study findings to debates on urban realities and infrastructure in the cities of developing countries. I build the analytical framework by repudiating what I consider as existing fallacies concerning related perspectives of transportation infrastructure projects in the Global South. I discuss how, as a resident of Nairobi, my view of the relations between different actors involved in the process and product of large road transportation infrastructure projects in my city differ from those of other scholars. I set forth my analytical framework by sequentially describing how these relationships are structured and sustained. Again, this does not mean that these relationships are discrete; they are mutually-reinforcing. In my analytical framework these are three relationships between actors and agencies that I reframe:

I first argue how the context of politics and governance influences the way in which crucial decisions are taken with regard to large road transportation infrastructure project and why, as a result, in this analytical framework **the public is conjoined with the private**. Second, I discuss how the way(s) in which activities in road space in Nairobi occur are at variance with current debates on formality, informality and the spatial

perspective in-between them. Thus, in this analytical framework **the formal is synthesised with the informal**. And, lastly, I discuss how road transportation projects are a reflection of the real impact of the interaction of people and space and why I choose **a diachronic scale** to represent views of how people, as marginalised as they are from planning and design decisions, “read”, “interpret” and adapt road transportation infrastructure for their own quotidian needs.

6.7 DEVELOPING AN ANALYTICAL FRAMEWORK

“I have to put these two questions to the most patriotic of Kenyans because I am concerned about your politics. And these are my concerns:

(1) Representation: *In what way do those you claim to elect represent you? What do you have in common with them? Seriously. How can someone who is so different from you represent you? (...) Are not common people best represented by other common people?*

(2) Succession: How is your politics determined by a coherent vision that consistently represents your needs? Let's take the example of Nairobi. There was the Nairobi Metro 2030 Strategy developed by the late Mutula Kilonzo under the Ministry of Nairobi Metropolitan Development. Then it was scrapped. You no longer hear about it except in books. Then there was the Nairobi Integrated Urban Development Master Plan, 2013. Governor Evans Kidero's ego lays claim to it. Then [a possible future governor of Nairobi County] Mike Sonko's ego will scrap it. Then he will develop Nairobi Metro 2060 Strategy. (...) See where this goes? It is bound to happen in every [national] government department, in every county [government]. (...) What binds it all together? How do your hopes and aspirations fit in?”

As I, in the post above, on social media, asked my friends—many of whom are architects with practices in Nairobi—these questions on the evening of 16th March 2015 I did not have any idea that it would help shape the analytical framework by which I would structure my research findings. But at that instance I was looking for philosophical honesty: for points of view that would adequately capture the fundamental dilemma of contemporary urban planning in the Global South. I had gone through existing literature on settlement and infrastructure planning in the Global South including Kenya. The arguments in this literature supported the notion that politics and governance play key roles in the planning of settlement and infrastructure in general (Hansen and Vaa, 2004, Klopp, 2000, Teipelke, 2014). Partisan politics, extreme inequalities, social segregation, fragmented planning regimes, corruption and historical injustices are identified the salient problems of planning (Hansen and Vaa, 2004).

The major problem with urban planning in Africa, as Hansen and Vaa (2004) put it, is the way, “*most African governments approach the problems of the city in a piecemeal*

and project oriented way.” This argument proposes that if this (singular) problem is resolved with consideration to existing legal and institutional frameworks then urban planning would be transformed to benefit citizens of all social classes and would produce more befitting urban environments. This stance is, ostensibly, substantiated by the realities of the Global South. What I judge, however, to be utterly unhelpful in solving the planning problems of the Global South is the manner in which the recommendations and conclusions of existing studies fail to take account of the intricacies and intrigues, or what Myers refers to as “entanglements” of the enduring postcolonial politics of the Global South. They display an unaffected naivety—seeing governments in sub-Saharan Africa as independent from the benefactors of their decisions. Consequently, they propose such remedial measures as advising planning agencies and government departments to integrate their disparate responsibilities and to involve the public in their decisions. In the city of Nairobi, that, certainly doesn’t work: criticism of the current model of urban planning in Kenya has been vociferous since the advent of urban planning in the postcolonial era⁷⁹, but nothing has changed in the way the government works. Legality has remained a matter of power rather than justice. Through dictatorship and multi-party politics, in scandal after scandal of government expenditure on what turns out to be white elephant proposals or shoddy projects, or collusion by cartels, the government’s methods of project initiation, project appraisal, and project delivery have remained curiously the same. Politics doesn’t change. I do not see the point in tailoring my research framework to ignore the influence of politics in urban planning of the Global South just as the literature on urbanism that I refer to above does. I formulate my analytical framework to make the analysis of everyday life as the end of the research rather than to target policy and governance and make benign recommendations as those of the aforementioned studies. It doesn’t make sense to target policy and governance given the way that the workings of government have not fundamentally changed to be more transparent, democratic and inclusive. The problems of planning in the Global South are immanently ideological. In the coda to *The Urban Question: A Marxist Approach* (Castells, 1979) entitled Social Structure and Social Change I, David Harvey and Brian Robson describe the dilemma faced by scholars in understanding the problems of the cities of the Global South. They claim that,

“the mushrooming cities of the third world (...) are located in a network of economics, social welfare and power politics, and the decisions we are called upon to make elude us in a fog of ideology.”

In this context scholarly literature—often based on a Westernised view of government and politics—that purports to prescribe change related to the functioning of governments

⁷⁹ See a comprehensive critique of the four major historic plans of Nairobi in Søren Emig and Zahir Ismail’s work, 1980, Notes on the urban planning of Nairobi. Royal Academy of Fine Arts, Copenhagen.

in the Global South as a solution for planning problems is simplistic. Having lived and worked in Nairobi all of my adult life and having kept abreast with current affairs in the city as my profession required, it occurred to me that what was changing as a function of infrastructure is the way society was organised and how people lived their daily lives. Common people were making radical decisions about their space. I saw it in the transformation of activities on major highways as the Kenya-Northern Corridor Transport Improvement Project (the section between the Nairobi CBD and Athi River) and the Thika Highway Improvement Project took place. I saw new physical elements and saw the way people adapted them to their own needs. And research on road infrastructure needed to shift its focus to the incipient social transformation rather than remain stuck on urban planning policy. By thinking back from the outcomes I as a researcher hope for and by considering the value of this research to studies of urban space in the Global South I frame my research on the transformation of Nairobi's road networks around lived space and **everyday life along the transformed highways**. My hope is that by analysing the physical and social transformations I can kick-start a debate on the spatial considerations of roadside communities as a starting point for the future ideological transformation of the way we study the urbanism of the Global South. The foundations of my theoretical framework are set in my knowledge on national and devolved politics as a citizen of Kenya, my knowledge as an architect and urban designer about how government works with regard to urban planning, my experience as a resident and traveller in the Nairobi Metropolitan Region, and, my experiences as a university researcher. My framework is based on the synthesis of existing categories.

6.8 THE AMALGAMATION OF THE PUBLIC WITH THE PRIVATE

First, in my analytical framework I **conjoin the public sector with the private sector**. Several neoliberal studies make diametrical distinctions between government and the private sector⁸⁰. In the Global South this is a false dichotomy. In reality it is individuals who hold power in the government and its agencies who approve and drive private sector development (Klopp, 2000, Rakodi, 1997, Simon, 1992). This intimate relationship between government and the private sector is captured in various discourses on urbanism in the Global South. For example Anyamba (2006) in his discussion of the relationship between informality and politics in Nairobi protests the government's snub of informality: a phenomenon that is made visible in the blight, squalidity and poor services of low-income settlements. Often, instead, the government allocates public resources for the development of middle-income and high-income housing estates and cognate developments in which government officials directly speculate or benefit (Anyamba, 2006, Klopp, 2000, Olima, 2001, Simon, 1992). Indeed, Teipelke (2014: 28-29) in his discussion of the framework of politics defining the pilferage of public land in Kenya posits that politics are never public: they are simultaneously public and private because,

“(...) the entanglements between public officials and private actors (if they did not happen to be the exact same persons) in the land grabbing created long-lasting patronage networks to a degree that even the publicity about injustices in massive land allocations from the state to private individuals did not cause a transformative revolt by the people.”

So, in Kenya the clustering of politics together with entrepreneurship in a mutually exploitative alliance of vested interests is the norm. The most powerful individuals in the Government of the Republic of Kenya also own the most assets and the largest proportion of private property—either in their own names or the names of family members or a coterie of proxies. For example, the families of the current president and the former presidents of the Government of Kenya own the largest portions of land and political families own approximately half the wealth in the country⁸¹. Anyamba (2006)

⁸⁰ In economic research on infrastructure, the government is assumed to be separate from the private sector. See for example Calderón, C., Servén, L. & World Bank. 2008. *Infrastructure and economic development in sub-Saharan Africa* [Online]. Washington, D.C., USA: World Bank. Available: <http://go.worldbank.org/T3L7O3XXV0>, Ndulu, B. J. 2006. Infrastructure, regional integration and growth in sub-Saharan Africa: dealing with the disadvantages of geography and sovereign fragmentation. *Journal of African Economies*, 15, 212-244. See also: <http://www.nathaninc.com/sites/default/files/Pub%20PDFs/CDS%20Action%20Plan%20Volume%201.pdf> (accessed on 23rd March, 2015). Considering the reality of the Global South this is a false dichotomy: private sector interests are intractably vested in government and vice versa. Economic research tends to be skewed towards seeing sub-Saharan African governments as independent of the private sector: a stance that overlooks the corruption and vested interests entrenched in African governance.

⁸¹ For evidence of this see the article at <http://mobile.nation.co.ke/news/Kenyans-Wealth-Families-Politicians/-/1950946/2215578/-/format/xhtml/-/krwmhtz/-/index.html> (accessed on 10th March, 2015).

claims that the manipulative relationship between politics and private wealth is manifested in the ostentatious lifestyles of political elites even as the majority of the country's citizens are marginalised. That is to say that the growing visible inequalities reveal the irony of politics where the majority poor seem to be responsible for the election of public officials who ignore their welfare. Chabal and Daloz, (1999: 52) further declassify this exploitative relationship. They reveal that,

“In Africa, it is expected that politics will lead to personal enrichment just as it is expected that wealth will have direct influence on political matters. Rich men are [politically] powerful. [Politically] powerful men are rich. Wealth and power are inextricably linked.”

So what exist as forces behind urban planning and transportation planning are not private or public interests: **they are vested interests**. This is important for reasons I elaborated in the discussion on politics and governance. What this means, specifically, is that in the context of the Global South it is practically impossible and intellectually false to separate public and private interests and, further, that public policy—and the public good—is often deliberately breached in order to shore up these vested interests.

6.9 THE SYNTHESIS OF THE FORMAL WITH THE INFORMAL

Second, my analytical framework **synthesises the formal with the informal**. This is because distinctions between activities and spaces based on their legality or illegality are no longer valid. In my experience of everyday life along transformed highways in Nairobi, the occurrence of what Anyamba (2006) terms diverse informalities across social classes and the intermittent willingness of (county) governments in the Nairobi Metropolitan Region to breaking established rules make such distinctions null. What actually exist are disparate **contestations between activities across the formal-informal gamut**. There are two types of distinctions between formality and informality that are made by studies of informality and infrastructure: the first involves distinctions made based on permanence. This type of distinction is based on the premise that informal activities can be categorised according to the solidity and immobility of their space; that, for example, a category of informality can be termed ‘survivalist’ because it is transient and mobile and is (exclusively) associated with the poorest urban dwellers (Anyamba, 2006). As shown in section 6.4, this is a simplistic categorisation that ignores the realities on the ground. **Formality/Informality is heterogeneous across social classes** and permanence/impermanence or mobility/immobility are not automatically associated with social class. Empirical evidence shows, too, that county governments whose jurisdictions extend across the Nairobi Metropolitan Region increasingly appropriate space for temporary activities that are not ‘survivalist’ (see

section 6.4). The second distinction is that formality and informality can be distinguished by economic considerations alone and that these economic considerations are always apparent. This distinction assumes that formality/informality is a function of the myriad activities of making a livelihood. This is also not true because, as I found out, **formality/informality in everyday life is constituted by more than economic considerations**. These considerations transduce purely economic choices into social and cultural choices; ranging from the way people associate with others they meet on city street (and spaces of the highway) to choices about community organisation and recreation in inadequately planned and fast-growing peri-urban neighbourhoods. Therefore its distinctions can be classified, if at all necessary, in other ways that relate more closely to the complexity of its origins and the nuanced performative manner in which it actually occurs.

6.10 THE DIACHRONIC SCALE

Third my analytical framework is **built on a diachronic time scale**. This diachronic time scale privileges the qualities of everyday life as the measure(s) of the efficacy of any infrastructure planning or design initiatives and any politics and economics associated with those planning and design initiatives. This is important because planning and design initiatives in the Global South are often premised on a synchronic time scale: major infrastructure projects are undertaken as a long-term solution to a current problem based on projections to some future utopian economic visions or modern political goals (see figure 6.4). Kenya Vision 2030 (Government of Kenya, 2007) and Nairobi Metro 2030 (Kenya Institute for Public Policy Research and Analysis -Infrastructure and Economic Services Division and Ministry of Nairobi Metropolitan Development, 2008) are textbook examples of this phenomenon. This view is often backed by means of grim statistical data of current population growth versus gaping infrastructure deficits and Panglossian projections of expected economic, political and social transformation succeeding infrastructure investment projects like those contained in the Kenya Vision 2030 document. However, there are critical problems with this approach. Current research reveals that cities in the Global South are not stable edifices whose patterns of growth and whose infrastructure growth or requirements consistently conform to predictions of demand, growth or change. In fact, they often defy statistical prediction (Cohen, 2004). Urban (infrastructure) planning in the Global South whilst it takes a definitively futuristic focus supported by statistics such as expected urban population growth, future motor vehicle traffic throughput and modern road technology there is no contingency measure for unexpected changes to actual growth that differ markedly from projected growth. While acknowledging that infrastructure requires transformation, its focus on the future either grossly simplifies or ignores what happens

on a continuum along chronological timeline—hour by hour, day by day. This is the critical nexus between infrastructure and the future where everyday life happens (see figure 6.5 and figure 6.6).

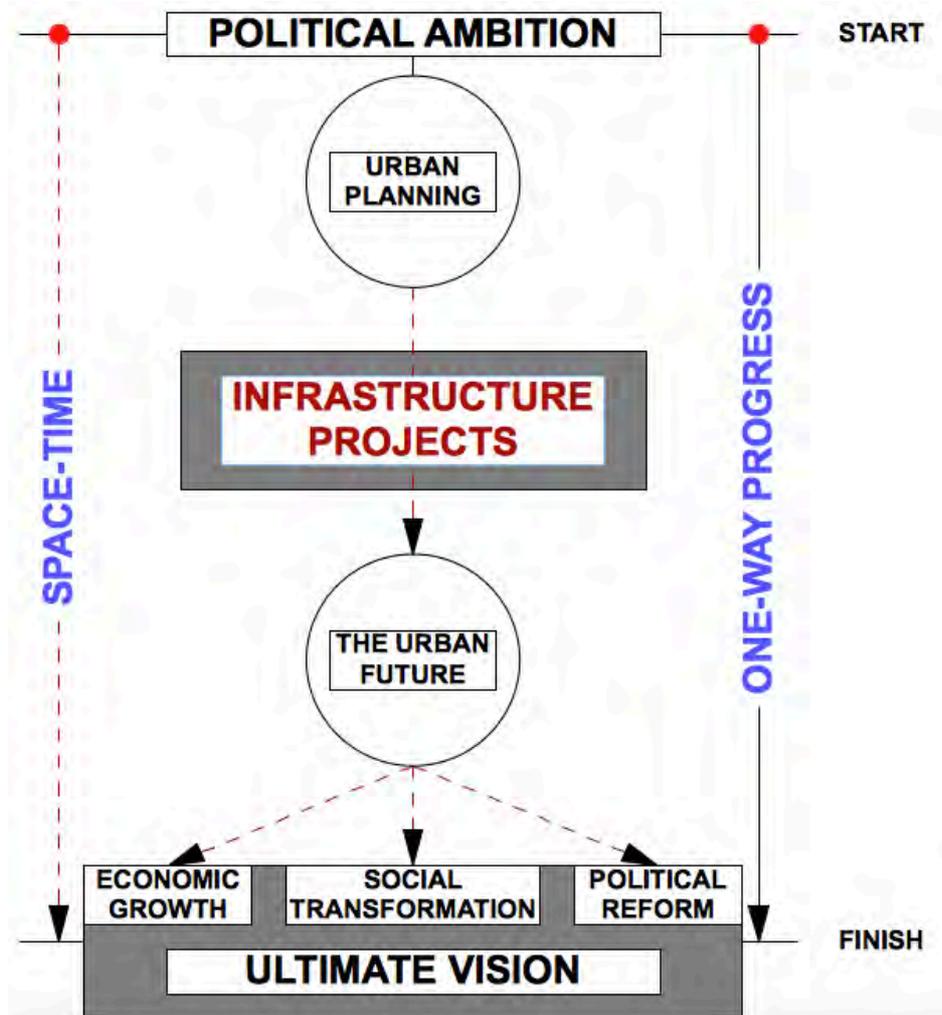


Figure 6.4: The prevailing model of infrastructure development in the Global South. In this model, time and progress are mono-directional with the ultimate end being the attainment of a vision of advancement. (Source: Author)

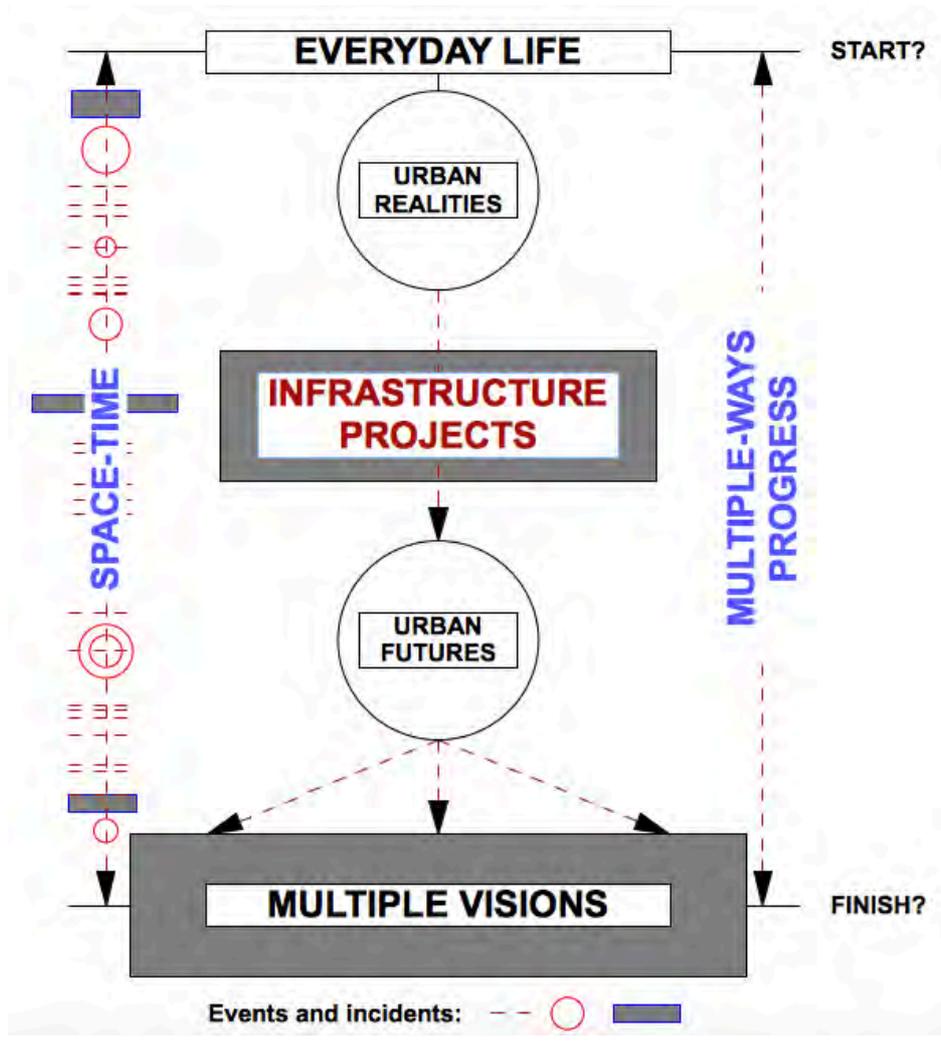


Figure 6.5: A framework defined by considerations to everyday life: its inputs, contexts and effects on road transportation infrastructure. Space-time is rooted in urban realities and both are considered as multi-directional. Consequently, the “thought machine” for infrastructure sees the possibility of urban futures comprising multiple visions. (Source: Author).

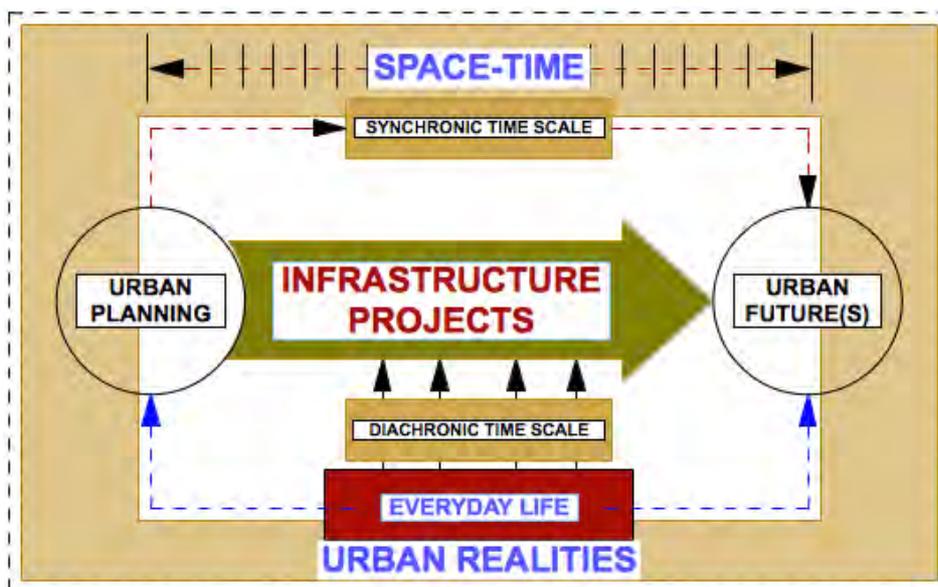


Figure 6.6: The analytical framework contrasting the synchronic time scale with the diachronic time scale of the proposed “thought machine.” (Source: Author).

In my revelation and subsequent repudiation of this overlooked discrepancy in my analytical framework I consider, first, that urban planning prompted by statistical projections of the population growth of urban areas of the Global South is at best experimental because urban population projections are often wrong (Cohen, 2004, Rakodi, 1997). And second, I contemplate that the appropriateness and efficacy of the current planning (of infrastructure) in the long term based on statistical projections and modernist transportation models is questionable given the current rapid evolution of technology and mobility accompanied by escalating concerns for environmental sustainability and widespread transformations in the way that people live their everyday lives (Dennis and Urry, 2009). While in the past, general purposes technologies evolved progressively they are now, due to the digital revolution, evolving exponentially across the world (Brynjolfsson and McAfee, 2012, Dennis and Urry, 2009, Grieco and Urry, 2011, Urry, 2007).

An examination of Government of Kenya documents on infrastructure development and related documents of the international development institutions (the World Bank and the African Development Bank) the Government of Kenya collaborates with on such projects makes it evident that infrastructure projects are, more than any other field, fundamentally connected to political economics at a global scale. The predominant view of new infrastructure projects in Kenya is predicated on a top-down prescription for social and economic transformation: that the building of modern infrastructure

redoubtably correlated to positive social and economic transformation. Whether this view originates with the Government of Kenya or whether it originates from its coterie of international development collaborators and donors is not clear: from the statements in recent formal infrastructure project documents the belief in this model is mutually reinforced between them. The push for such projects as, primarily, an economic enabler is, therefore, often a given. For instance, the World Bank project appraisal reports of the Kenya National Urban Transport Improvement Project⁸² (2012: 2) describes how,

“Vision 2030, Kenya’s long-term development strategy, aims at transforming Kenya into a middle-income country. Under its economic pillar, the gross domestic product is expected to grow at 10 percent per annum. This calls for the removal of bottlenecks for growth through reforms and increased investment in infrastructure, including Information Communications Technology to unlock existing potential and productivity, promote competitiveness, and improve access to public services, all of which are necessary to transform Kenya from a low- to a middle-income country by 2030. Urban areas as engines of economic growth would play a crucial role in the realization of this vision. The World Bank’s Country Partnership Strategy (CPS), its 2008-9 Multi-Donor Infrastructure Diagnostic for Kenya, and its 2006 Poverty Assessment all support this agenda, given that improved infrastructure is associated with the movement out of poverty.”

The top-down economic and political biases exhibited in such views, the framing of infrastructural projects at the outset as socioeconomic projects coupled with recent economic studies⁸³ on infrastructural projects in the Global South have conspired to tilt prevailing infrastructure theory into overt econometrics. Economic analyses of infrastructure in Africa tend to see local hinterland areas rich in natural resources as having “locked economic value” and to privilege infrastructure as the opener of this potential to be harnessed for national or regional economic development (Foster and Briceño-Garmendia, 2010, Gwilliam and Bofinger, 2011, Teipelke, 2014). Infrastructure investment is seen to be futuristic: a driver of the transformation of African countries from their current intractable poverty, economic stagnation and underdevelopment into desirable middle-income economies. The present and the past are only useful in as far as justifying the initiation of projects is concerned. But criticism of this approach is the enduring econometric dilemma of cause and effect: what causes what? *Does new highway construction trigger new [social and economic] urban development or does new [social and economic] urban development necessitate new highway construction?* Admittedly, the research parameters are often unclear and the objects of research difficult to identify (Teipelke, 2014). It even becomes harder to

⁸² An overview of the world Bank report can be found at <http://www.worldbank.org/projects/P126321/kenya-national-urban-transport-improvement-project?lang=en> (accessed on 18th March, 2015).

⁸³ This tilt can be seen in such scholastic work on infrastructure, infrastructure policy and economic growth as Calderon, Servén and the World Bank (2008), Ayogu (2007), and Ndulu (2006).

identify parameters for assessing the economic impact of transport infrastructure projects when such projects are conceived as inter- or intra-regional.

While assessments of the social and economic benefits of highway infrastructure development is, at best, an assessment of costs, it is not costs alone that constitute the lived experiences of people along the highway. Economic assessments, in their abstraction and aggregation of parameters, ignore the impacts of new highway construction on everyday life. It is quite possible for infrastructural projects to be configured to reinforce social segregation. In the Global South, it is common for public infrastructures of various kinds to bypass or displace poor urban communities so as to serve more privileged communities (Hansen and Vaa, 2004). In such cases impacts cannot simply be crunched into singular numerical economic indicators. If that were done it would say nothing about the true nature of infrastructure in space: about its indictment in the creation of social inequalities and its presumptuous disconnections, its restricted accessibility and its real quotidian effects. In the context of the Global South, it is more useful, to **assess infrastructure as a function of everyday life** because as Myers (2003) argues, *“the [everyday] decisions of ordinary (...) citizens are the creative heart of African urban form.”*

It is more socially responsible and more useful for contributions to economics and environmental sustainability to observe and evaluate the quality of everyday life in space and time and to represent this as a measure of the appropriateness for context of transportation infrastructure transformation(s). It is thus possible to turn the fundamental argument linking the transformation of transportation infrastructure to social and economic enablement on its head.

Chapter 7

7 REFLECTIONS

7.1 NEW KNOWLEDGE

A reflection into this study requires a recapitulation of the results of the research study: in other words—what new knowledge has come out of the study? In my view the fundamental information coming out of the study relate to the nature of the urban process concurrent with road transportation infrastructure transformations in Nairobi. It is possible to clearly pick out its points of departure from existing research:

First, that **transformed highways have facilitated categories of informal space hitherto unrecognised** in urban studies. These categories emanate from the interactions between urban actors, their activities, their differing movements, signage and products occurring in the spaces of infrastructure. These interactions not only animate space, but also dominate spatial elements—such as buildings and highways—that have been privileged in several urban planning studies of the Global South on the basis of their permanence and scale. The types of interactions that produce new informalities are more performative: they relate to the way everyday life is encountered and negotiated on streets and highways. They also are responses dependent on city history: for example, whether the elements of the transformed highways are designed with respect to the unique history of place. This is a departure from existing knowledge Nairobi's urban process: the investigation of informality has so far been assumed to be one of the externalities of recurrent failures of urban planning as is typical of postcolonial African cities. In this narrative tenure is key to the types of informalities that result. The units of analysis are rooted in the distinctions of the materiality of structures containing activities, and the economic states and intentions of the actors building those structures (see, for example, Anyamba, (2006)). The particular weakness of this approach to the urban process is its privileging of urban development as an overwhelmingly economic endeavour while simultaneously disparaging potentially competing perspectives and narratives that introduce aspects of everyday life that transcend economic abilities and choices. The description of categories of informality unrecognised by present research gives a better understanding of the urban process.

Second, that informality is not just a collection of the tactics of individuals and communities across Nairobi's enduring socioeconomic divide for coping with the bureaucracies and inefficiencies of the formal planning agencies charged with the task of organising the cities of the Global South. **Informality is occurring as an emergent phenomenon that is embraced by official governing authorities as a response for maintaining contact and legitimacy with citizens.** This occurrence is noticeable in the counties constituting the Nairobi Metropolitan Region as the building of new infrastructure has been achieved within a devolved political dispensation that has seen county governments attain some level of autonomy. The Mlolongo Township and Athi River-Kitengela case studies contain clear evidence that county governments—inheriting

the planning deficits and inadequacies of the central government and lacking requisite public space—break existing planning regulations in order to gain legitimacy with communities that have progressively been marginalised and pushed into operating in informal urban spaces. The transformation of infrastructure has provided the opportunity for resort to the use of road space in order to gain legitimacy in the eyes of county citizens. This contradiction in the official perspective of informality offers incipient opportunities for urban informality studies to legitimise and incorporate performativity and impermanence in the formal planning of planning agencies.

Third, that **the ongoing urban process reveals a difference in character between the old town and the new town.** The new town comprises those parts of the Nairobi Metropolitan Area that were peripheral before the infrastructure transformations but have been opened up by the new highways passing through them and included in the land speculation and new construction of the expanding city. These are the areas of the city with the most rapid growth as majority of the city's residents are pushed outward by economic forces into the metropolitan region. The old city is made up of the concentric rings of development with the railway town as its centre and the infrastructural armatures radiating from it into the metropolitan region. The new city is distinct from the old city because it is more informal and performative: its life-pulse dominated by products, signs and performances rather than buildings, the railway and the transformed highways. In the study the domination of the new town by products and signs is a pointer to its competition with the old town for urban opportunities. The new town is also characterised by the appropriation of public space by private interests: private signs prescribe expected behaviour on transformed highway even though the highway is public space. This element of territoriality manifests an emergent urban process that entwines private interests with public space.

Fourth, that **the urban process is produced by a system that can be analysed or synthesised as a whole but not reduced into its parts.** The different perspectives of infrastructure in the Global South provide evident that infrastructure is laden with the political undertones. In Nairobi, the organisation and workings of the public sector are intricately connected with the operations of the private sector. At every point in the research into the urbanism of Nairobi this connection must be taken into account. This is a departure from the existing studies that attempt to make recommendations addressing the actions of different urban actors—particularly skewed towards formal planning (see, for example Teipelke (2014))—but ignore the relationships among actors and multiple actions. This condition demands that recommendations synthesises multiple elements of infrastructural development including their timing, their inputs, their contexts and their effects.

7.2 URBAN REALITIES AND ROAD TRANSPORTATION INFRASTRUCTURE PROJECTS IN NAIROBI

“In creating the future, the past is sometimes forgotten, yet it is essential. Without it, whatever we make today won’t be important tomorrow.” –Marcel Wanders

In carrying out this study I sought to gain an understanding of how formal attempts at development are reclaimed and inundated by the everyday realities of the heterogeneous informality that characterises Nairobi’s urban process. While political rhetoric and engineering design are about gaining political legitimacy, exercising domination and impressing the public by overcoming the physical constraints of space, space is itself reflective of the complex performative histories embedded in everyday life. Therein lies the disconnection between infrastructure seen as a project for change and infrastructure used as a scene of daily life. On one hand there resides pressure to shape public opinion and to impose the structure of a panoptic order, whilst on the other hand there are the sweltering pressures of urban realities and the imbricated effects of social inequalities left to fester over the years. The efficacy of urban public projects then can be judged to be how closely these two ends of what I call the urban project axis are brought together. This study specifically emphasises everyday life as the repertoire of a plurality of possibilities for effective types of urbanity. What does this study, then, help reveal about road transportation infrastructure projects? I asked three research questions in regard to this: (1) What are the characteristics of the current spatial transformation(s) of road transportation infrastructure in Nairobi’s Metropolitan Region? (2) How have people responded to current spatial transformations of road transportation infrastructure in Nairobi’s Metropolitan Region? (3) What implications for Nairobi’s urban process do people’s everyday responses to the current transformations of road transportation infrastructure portend? These are answered systematically in the following sections:

7.3 HIGHWAYS AND NAIROBI’S PHYSICAL AND SOCIAL TRANSFORMATIONS

The physical and social characteristics of Nairobi Metropolitan Regions road transportation infrastructure are multiple. There are definite and major physical changes. The highways have restricted access into and out of the highway to neighbouring developments. They have created new growth nodes at intersections and at the locations where informal activities happen next to footbridges. Journeys through the city have changed. Public road transportation no longer operates predictable routes. And physical control and covert surveillance has increased along the highways with the erection of barriers installation of cameras and the deployment of traffic marshals (in addition to the traffic police). Some barriers are makeshift additions to the barriers—crash barriers,

fences, palisades, and razor wire—which existed on the highway immediately after completion. These barriers are additional measures to control traffic, perhaps an indictment of the design of the highways. In terms of physical safety the highways are not only perceived to be more dangerous to cross, but, according to official accident reports, are actually deadly. Some people no longer cross the highways. Some former landmarks of the metropolitan area are no longer part of the experience of highway journeys (see plate 7.0). They are obstructed from view by drastic changes of landforms take vehicles through tunnels or overpasses. The highways get flooded in the heavy rains with the more radically transformed highways being worst affected—a phenomenon that was rare in the old system of highways. Land use has changed with the presence of sharper juxtapositions of formal and informal developments; shopping malls served by the highway, and informal settlements whose entire infrastructure is in a condition of benign neglect.



Tomorrow, the Tuesday, 9th of April 2013 Kenya will get a new president. The Presidential inauguration ceremony will take place at the 60,000 cheater, Moi International Sports Center - Kasarani. With logistics planned, the only hindrance can be getting to the stadium and this post will direct you to the gates.

Plate 7.0: A post on social media directing the public to the largest stadium in Kenya, a prominent landmark before the transformations. The experience of the city was changed by the transformations. (Source: Megaprojects Kenya)

There are also definite social changes. The building of highways has created a rise in land prices that has led to escalating costs of housing even in those locations of the metropolitan region without amenities of any kind. People have to find affordable housing farther away from the central city. The system of highways has continued to be the default lifeline for traditional ways of life such as that of Maasai pastoralists. The highways, by connecting various grasslands and being the remaining open space, make traditional life possible in a modernising and densely populated city. Many social groups have grown out of communal concerns cropping up about the highway: business collaborations, auxiliary transportation, social welfare for the poor, communal security and so forth. These may not be foreseen in the highway plans, but they are an important part of everyday life in roadside communities.

Conversely, many pernicious patterns etched in Nairobi's unequal historical development have not changed with the construction of the transformed highways. The road transportation infrastructure projects have been planned and designed in conformation to a recognised segregationist pattern and a radial pattern that converges and limits opportunity to the central city. Though recommendations in past and present plans specified that the highway networks would work best to ameliorate congestion if public transportation was improved, this improvement has not been prioritised. Just like in past plans the transportation needs of the (marginalised) majority have, at best, met middling support from politicians and decision-makers.

7.4 RESPONSES TO ROAD TRANSPORTATION INFRASTRUCTURE TRANSFORMATIONS IN NAIROBI

The road transportation infrastructure projects, no matter how drastic they change the landscape and how impressive they look, still mean many things to many people—including those people regarded and, so, marginalised by the establishment as social detritus. Their interpretation of highways and their elements is plural and shows in the activities that proliferate on, above, below and beside them. The political class and their professional collaborators may be proud of pushing for unprecedented development, for attracting regional and global attention (for an example, see plate 7.1), for hastening the journey into a future, possibly, of modernity and high mobility. But unless the people themselves are involved in determining their priorities, those projects are going to be impositions and people will not change their behaviour to conform to the demands of projects.

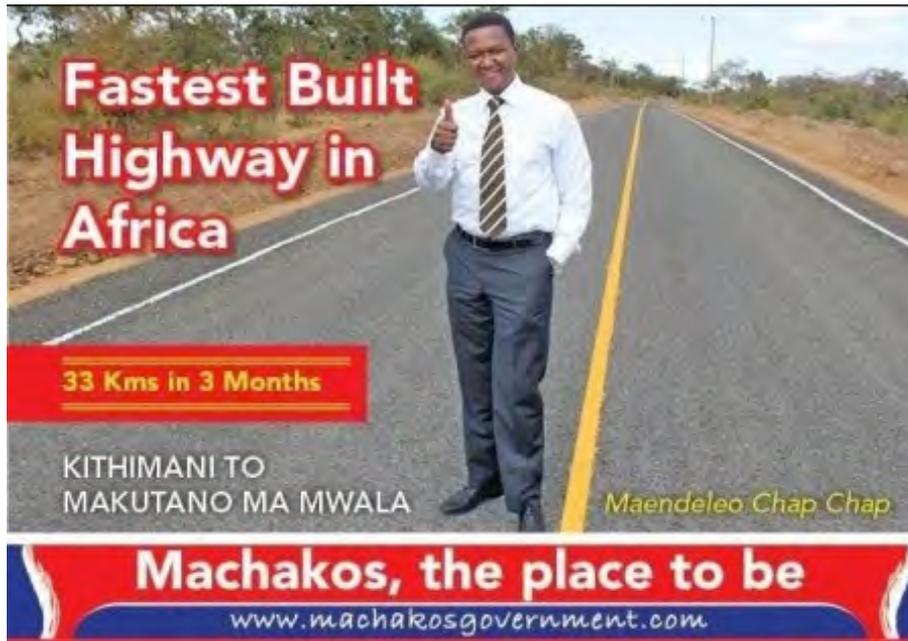


Plate 7.1: An advert in 2014 showing the cropped image of the incumbent Governor of Machakos County Alfred Mutua approving of a new highway in his jurisdiction. This implies that new highways are essentially legacy projects. Nairobi's infrastructure projects are, arguably, a means to gain public legitimacy. (Source: Alfred Mutua official Facebook profile)

The building of road transportation infrastructure projects may entail radical physical changes to the landscape, but that alone cannot contrive social change. Communities and their living conditions should not have to conform to the constraints of showpiece projects: project need to be designed to suit the needs and conditions of communities. Whereas the engineers and their backers construct highways and elements within highways expecting them to trigger changes of behaviour in disparate urban population comprising many different interests, aspirations and conditions, those same highways are neither perceived nor used passively by local communities. They respond to them in different ways imbued with the thickness of everyday life's nuances. Where there are no public spaces, the highways and their elements are claimed as public space. Where the local public is defined by a particular economic or cultural history, it's vagaries play out spatially on their stretch of the highway. Where there are many interests between diverse groups they negotiate who uses the highway, how they use the highway and when they get to use the highway.

7.5 THE IMPLICATIONS OF THE STUDY FOR NAIROBI'S URBAN PROCESS

A scholarly perusal of Nairobi's history shows the dubious role that road transportation infrastructure has played in reinforcing tacit social divides, and in marginalising and constraining the expansion of unwanted urban majorities. Therefore when a pattern that has been studied and described to be segregationist is reinforced, in a modern and more imposing form, in wider highways and more costly mega-projects, then the social transformation rhetoric that backs it has to be examined. It is certainly not expected that a reinforcement of segregationist development, ensconced in noble proposals for the public good that will never see the light of day, will in several years turn out to be just fine. The political attitude 'build-it-and-they-will-come' (see Alfred Mutua's speech in Appendix B) now taking root among politicians responsible for development decisions in Nairobi are preposterous and meant to discount the needs and realities of the poor majority: they are vanity projects, a mere stamp of political legitimacy. In looking to foreign rather than local investment and favouring western ideals they spurn the self-organising creativity that the urban poor have used to solve their own urban settlement problems since the advent of Kenya's urbanisation. We can interpret the current activities invading highways as the continuing contestation of space between those with bureaucratic power and those with everyday creative power. After all, a public project for which the Kenyan tax-paying public is indebted for must, necessarily, be inclusive: responsive to the needs of everyone who constitutes that tax-paying public.

Those like Teipelke, 2014, who rush to claim that the recent road transportation infrastructure projects in Nairobi do not smirk of political connotation just because they were planned in the 1970s choose, to the detriment of reason and contextual complexity, to ignore the way government works in Kenya. The way things work on paper is not the way they work in reality. In recent times projects have been shrouded in secrecy and commissioned in arcane circumstances with the heavy influence of representatives of state openly involved—the National Youth Service Kibera slum upgrading project and the Standard Gauge Railway Project are cases in point. And they also choose to ignore the reality that since the 1970s, highway expansion projects done elsewhere in the world have come to show that highway expansion projects do not solve traffic problems. A reference to the failure of these projects would have resulted in a rethinking of the appropriateness of the current infrastructure expansion drive for Nairobi. But this was not the case. How then may we construe the informal activities that happen on the highway? While more formalised processes and the speculation they drive continue to drive affordable development to the margins of the metropolitan area, the accompanying sprawl of development and the fuzziness of governance between counties, has made it simultaneously more difficult to monitor and control urban activities and urban functions. Informal everyday processes contest this displacement by taking advantage of the increasing fuzziness and connecting to the promise that come with the highway, be

they social, economic or cultural. Everyday life is founded in an inclusive reality that accepts the new without denying the historicity and uniqueness of place.

7.6 RECOMMENDATIONS

The big man political influence that shows its sleight of hand in public projects is the single biggest challenge in resolving road transportation infrastructure issues. Nothing else less than the common people's will to demand for transparent governance can work to resolve this challenge. However, some hope lies in the leeway given professionals in their involvement in the planning, design and supervision of public projects. And regulations prescribing professional practice are more amenable to change relative to the tweaks the political system requires to begin operating for the public good. I suggest the following recommendations regarding professional practice involving public projects:

(1) Transdisciplinary collaboration. It is important in order for professionals to exchange ideas and to appreciate the complexity of developing world cities. The prevailing model of practice is still based on an interdisciplinary top-down approach in spite of the recent democratic reforms that have been enshrined in a new constitution since 2010. This model, contrary to advancements in knowledge in the built environment, still compartmentalises design and planning problems as straightforward and bounded rather than as wicked problems with multiple solutions and multiple implications. It also fails to acknowledge that in a context of scarcity, inequality, corruption and neglect, individuals and communities proactively lay claim to urban space. A legal framework, negotiated jointly between existing professional bodies such as the Engineering Registration Board, the Architectural Association of Kenya, and the Town Planners Association of Kenya, that requires transdisciplinarity in the approval of public projects, in addition to public participation, would introduce more hurdles in the path of politicians looking for a quick fix for their legitimacy issues. Again, professional can make regulations and practice notes that require the input and approval of all regional authorities affected by megaprojects before these projects are implemented.

(2) The worldviews of economists and engineers working on road transportation infrastructure projects suggest that they underestimate or ignore the influence that everyday life has over infrastructure. It could be a matter of being stuck behind office walls crunching numbers or entrenching the panoptic eye. Or it could be that such work never requires involvement with the public in a real world setting. I suggest that training should be instituted, through Continuous Professional development programmes, for a whole range of professionals in the built environment that requires them to participate in social work regularly in order that they may not lose touch with the realities that urban

majorities have to deal with everyday. It may not be possible to change the agendas of the powers behind international donor institutions, but it can be possible to begin sensitising their staff that oversee projects about the impacts that communities have on transportation infrastructure.

(3) Planning should be a continuous process. The dependence of planning on political will, as currently happens, does not allow for continuity and consistency in the urban process. Each regime comes with its own agenda and scuttles the work began during the reign of previous regime. Urban complexity should be evaluated in the long run and to do this a more consultative and less confrontational politics could be helpful in the short term. But again, it is in the ability of professionals to push for consistency in planning goals in the face of changing politics and to push for greater openness and accountability to the public at every stage in the ways in which achievements are made the long term.

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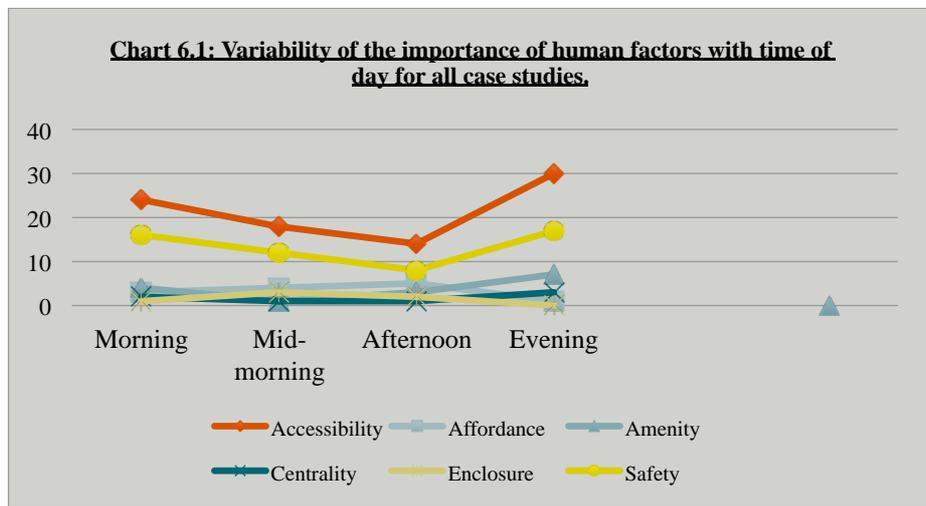
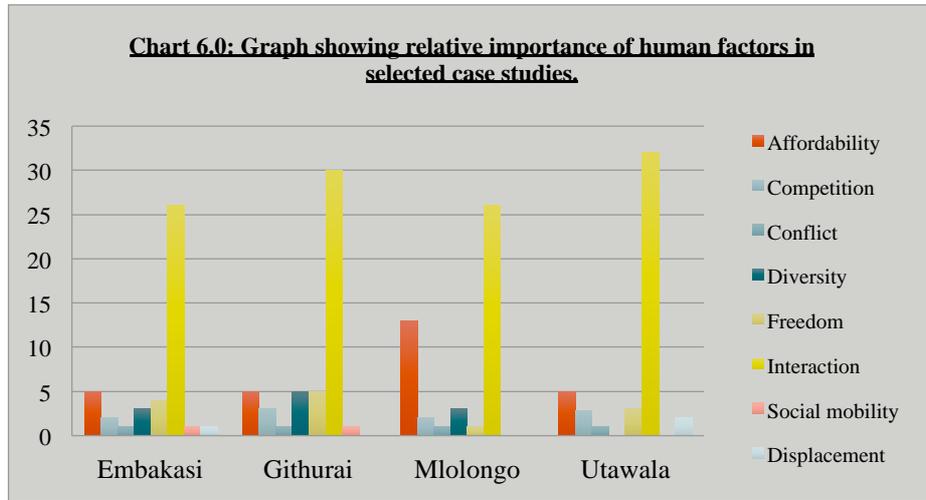
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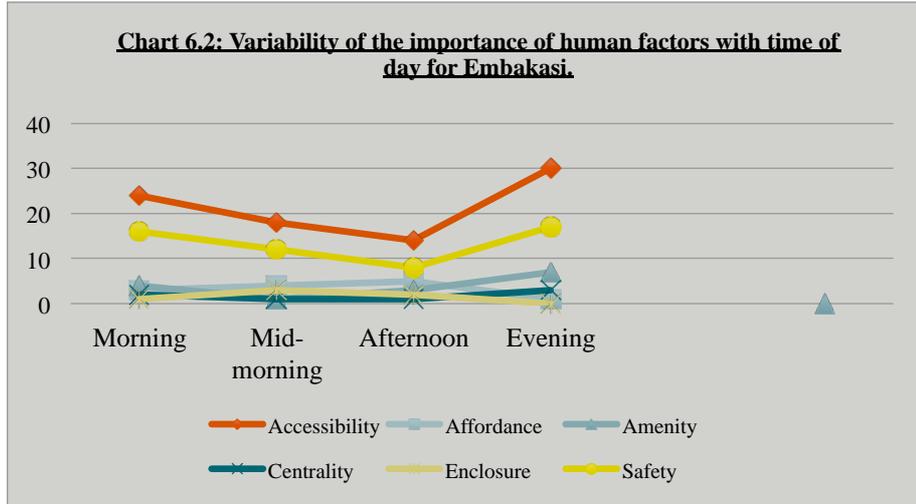
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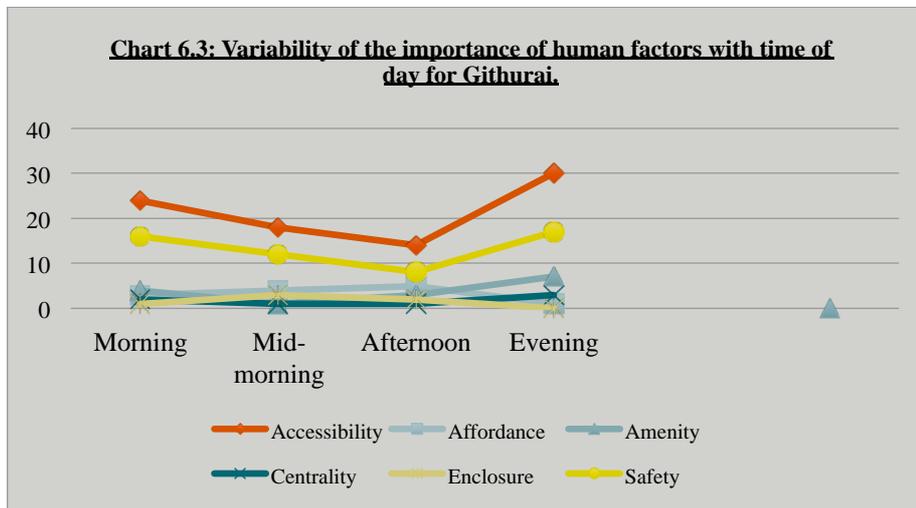
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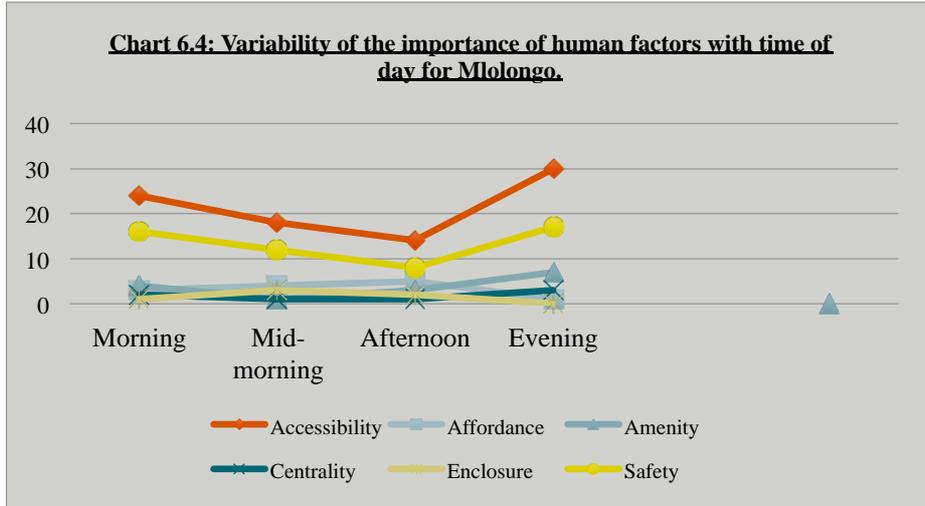


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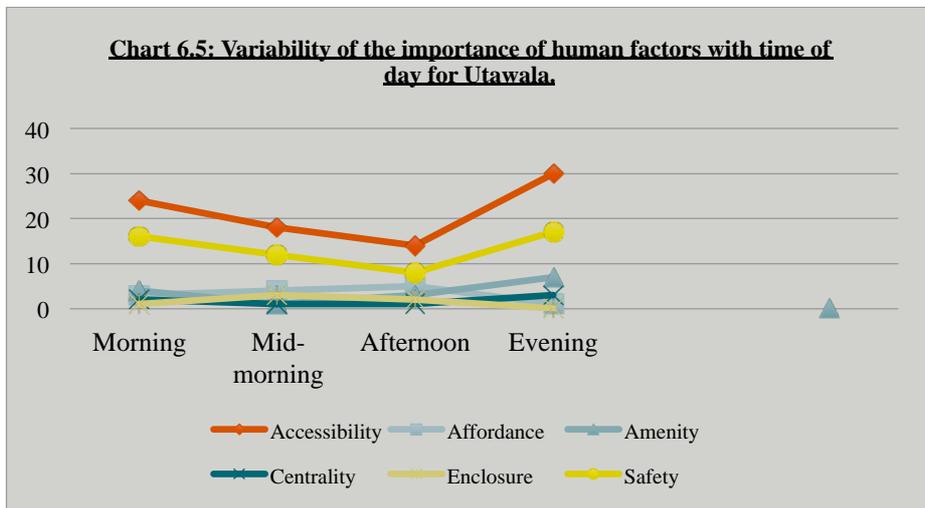


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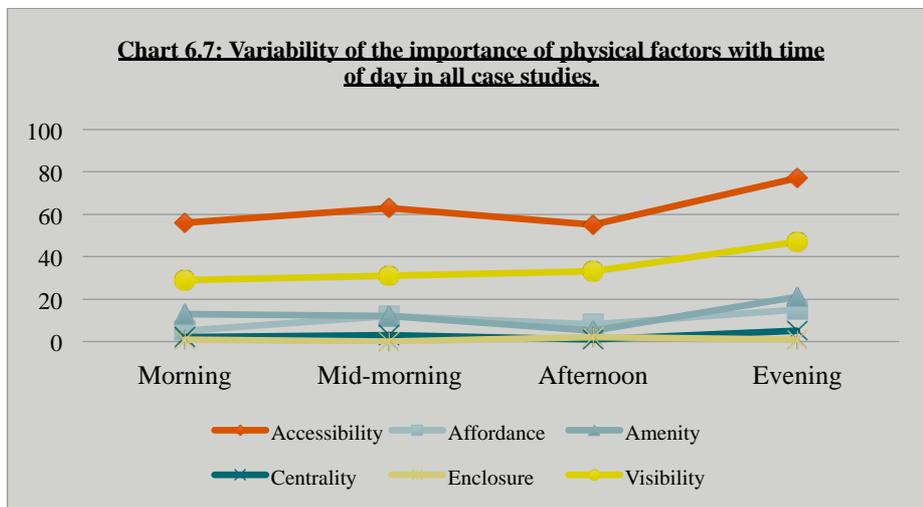
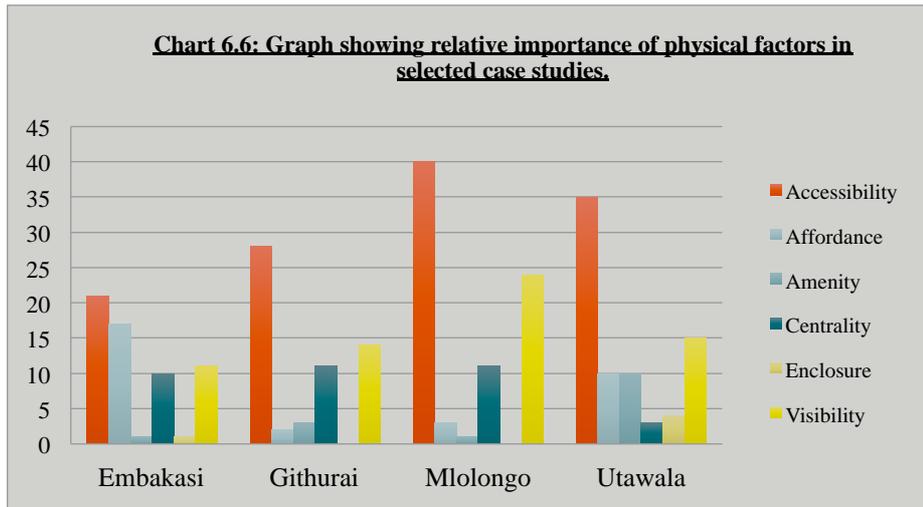




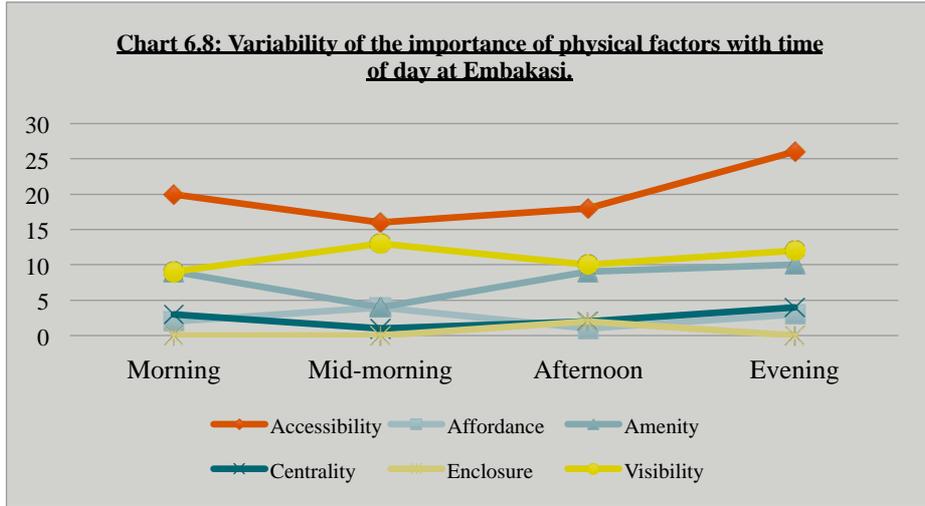
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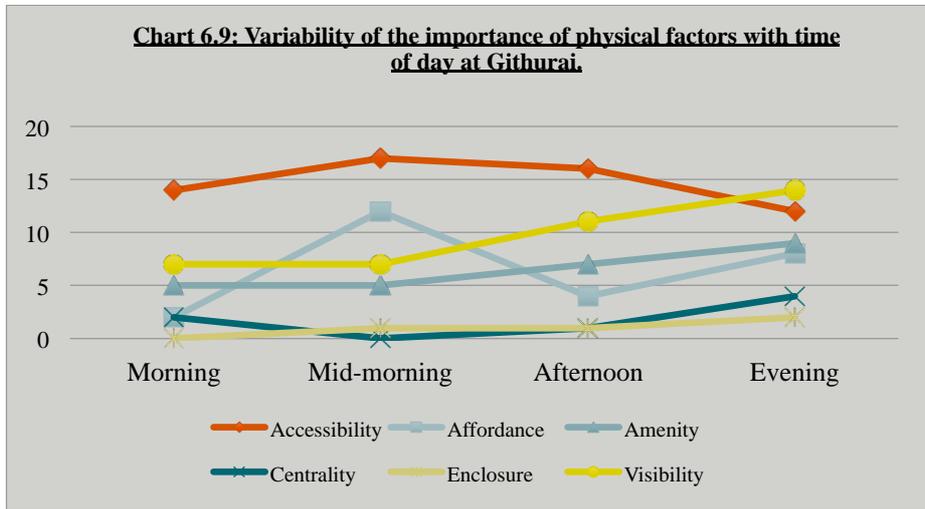
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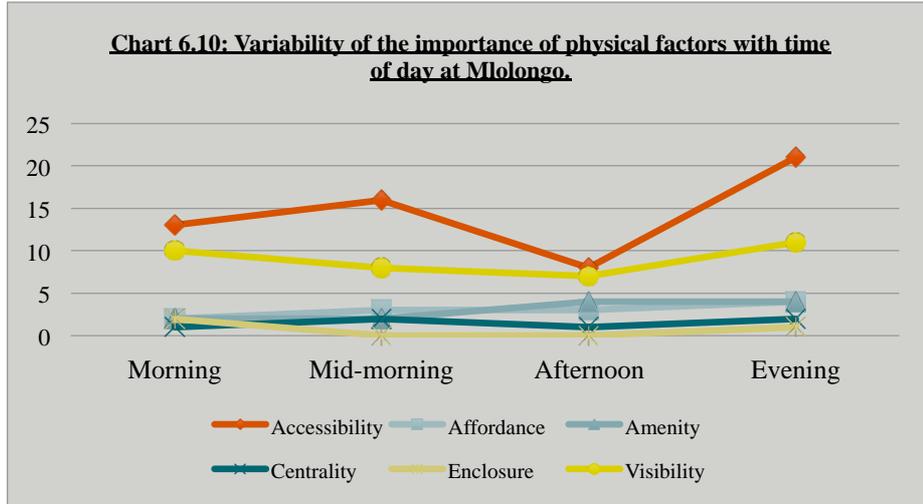
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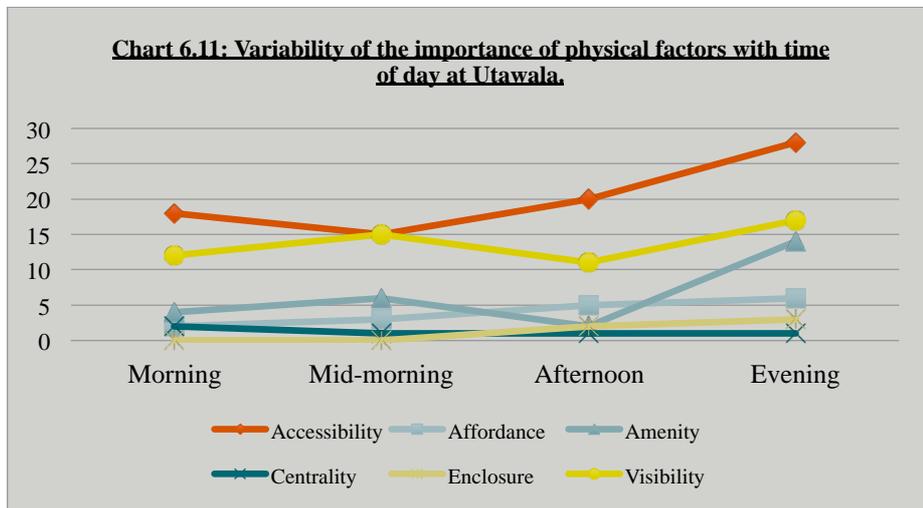
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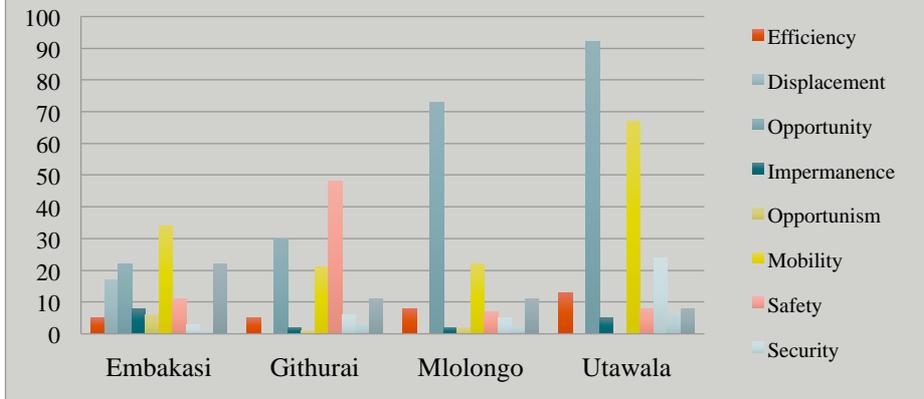
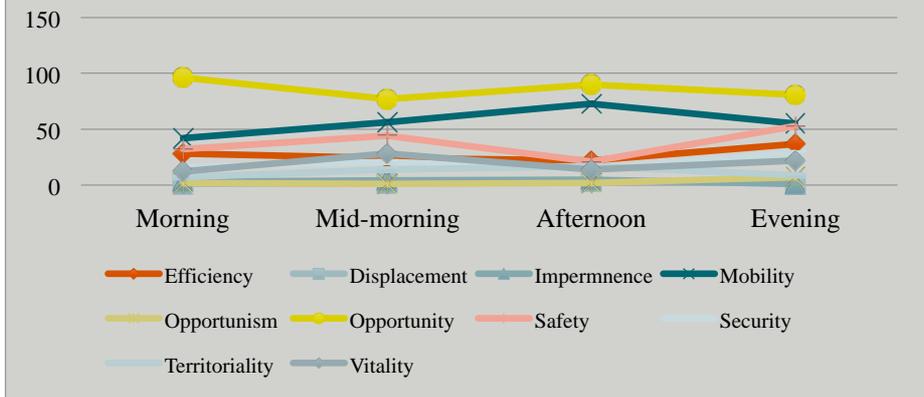
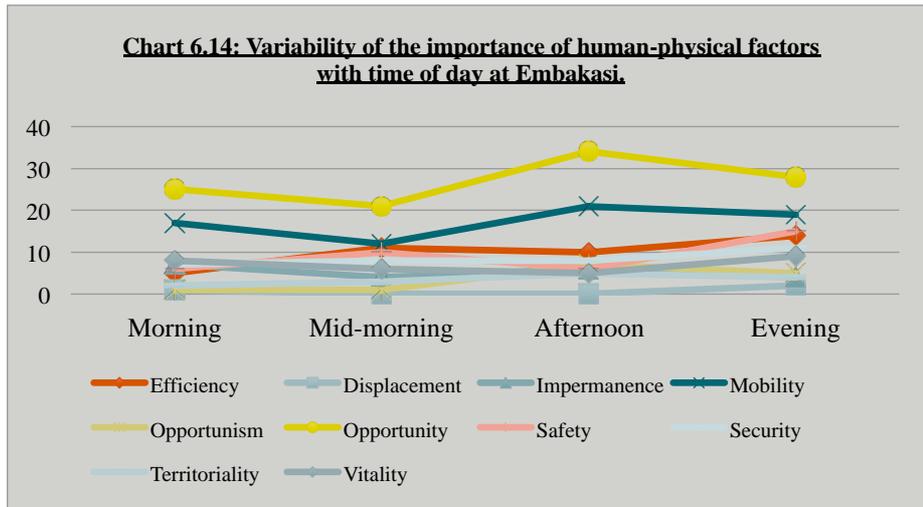
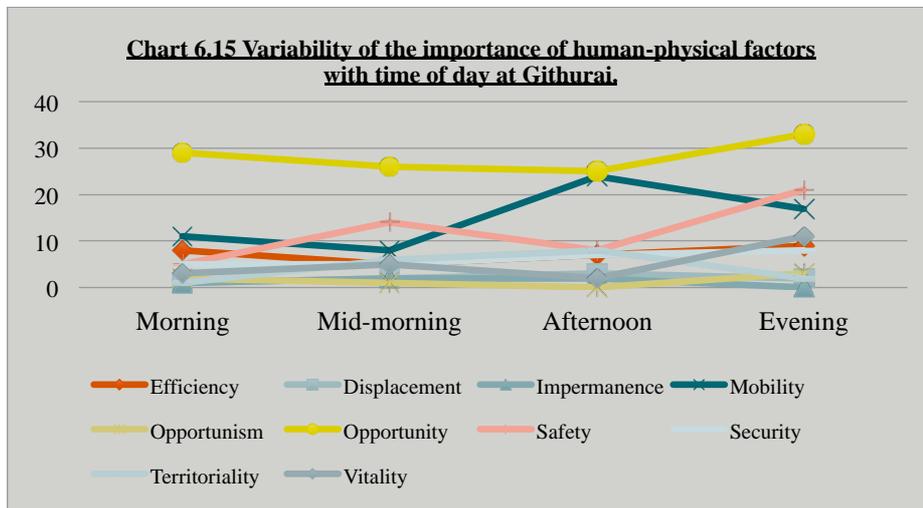


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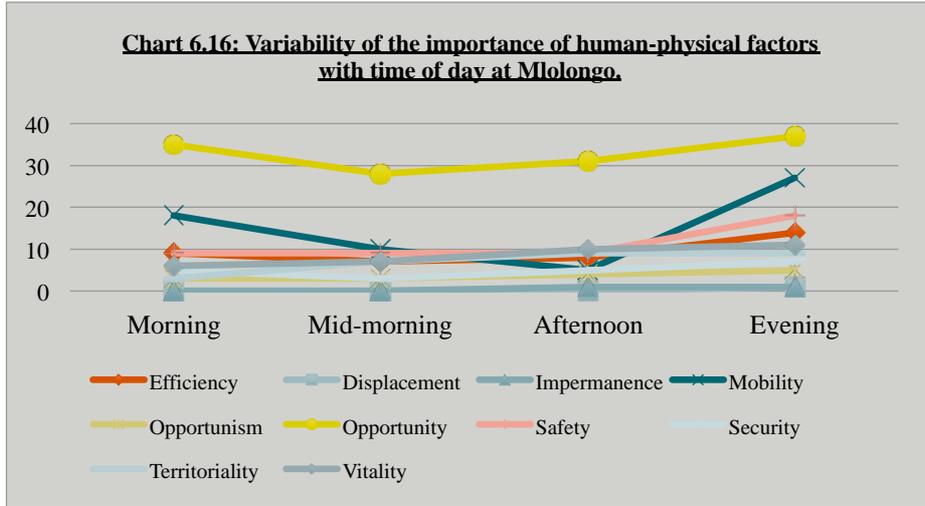




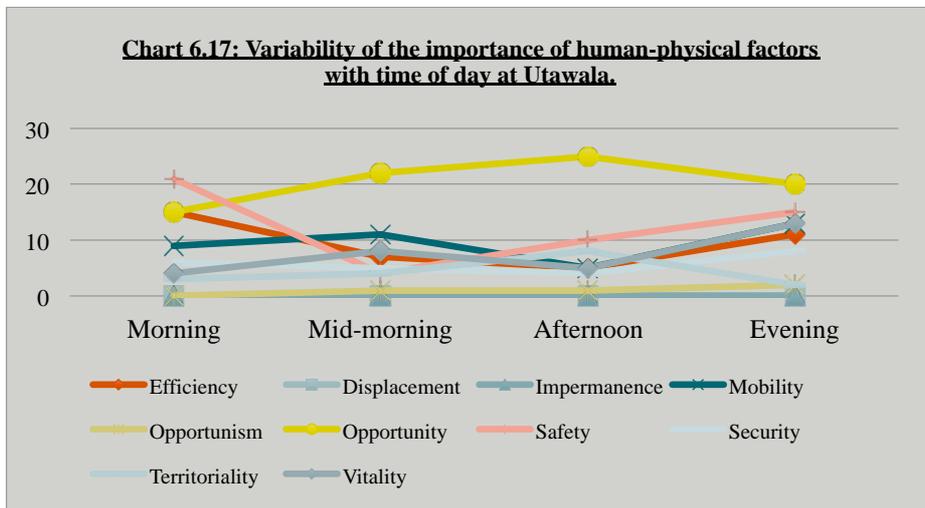
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Appendices

10 APPENDICES

APPENDIX A: POLITICAL STATEMENTS ON HIGHWAYS AND
DEVELOPMENT IN THE NAIROBI METROPOLITAN REGION

- (1) *Speech by His Excellency Honourable Mwai Kibaki, C.G.H., M.P.,
President and Commander-in-Chief of the Defence Forces of the
Republic of Kenya on the occasion of the official opening of Nairobi-
Thika Superhighway, 9th November; 2012*

“The African Development Bank

President, Donald Kaberuka,

Distinguished Guests,

Ladies and Gentlemen,

I am indeed very pleased to officially open the Nairobi-Thika Super-highway.

This road is an important commercial and transport corridor serving the densely populated areas of Kasarani, Githurai, Kahawa, Zimmerman, Ruiru and Juja as well as the rapidly growing Thika town. The road also links the main commercial centres of Isiolo, Marsabit, Moyale and Mandera to Nairobi. Moreover, this highway constitutes an important part of the regional and continental transport corridor from Cape Town, South Africa to Cairo, Egypt.

The improvement and upgrading of Nairobi-Thika highway, therefore, provides a reliable transport corridor linking Kenya with Ethiopia via Moyale in the north and with Tanzania via Namanga in the south.

I take this opportunity to commend all those involved in the planning and implementation of this hallmark project for their hard work and dedication.

Ladies and Gentlemen,

My government recognizes that infrastructure development not only promotes trade and helps to create a conducive business environment, but also plays an important role in national unity and integration. As Kenyans interact and do business together, they get to appreciate and value people as well as cultures from different parts of the country. In addition, better roads provide proximity to major commercial centres and open up areas for residential settlement where citizens from different parts of the country can buy or rent houses. Indeed, the areas near this super highway are a case in point. In the past few years, vast areas in Juja, Ruiru and Thika have now been developed into residential areas.

It is in recognition of the importance of roads that my Government has continued to allocate a substantial proportion of its budget every year to finance road programmes. In the Financial Year 2008/09, for instance, the Government allocated 90 billion shillings to the roads sub-sector, which increased to 104 billion in the Financial Year 2009/10. This Financial Year, we have further scaled up resources to the roads sub-sector to an all-time high of 125 billion. These resources are going towards improvement and upgrading of the road network in order to strengthen transport linkages with our neighbouring countries and enhance trade opportunities for our people.

This super-highway is a great example of these efforts and of our commitment to transform Kenya into a strong economic hub for the region and beyond. Besides this super-highway, we are upgrading the entire road from Isiolo to Moyale by developing it into a modern highway. The first 136-kilometre section from Isiolo to Merille is complete; and just two days ago, I launched the construction of the road section from Turbi to Moyale.

With regard to our border with Tanzania, we have recently completed rehabilitation of the Athi River-Namanga section of the Athi-River-Namanga-Arusha Road to modern specifications.

We are also rehabilitating and upgrading the road from Kisumu-Kakamega-Webuye-Kitale at over 10 billion shillings while plans are at an advanced stage to upgrade the road from Endebbes to Suam. The improvement of these road sections is expected to enhance trade with Uganda.

In addition to these, we are rehabilitating the road from Mau Summit to Kericho to Nyamasaria and on to Kisumu, including the Kisumu bypass, at a cost of over 20 billion shillings. In our coastal region, the construction of the Dongo Kundu bypass in Mombasa will start next year at a cost of 35 billion shillings.

Ladies and Gentlemen,

I would like to reiterate that despite remarkable improvements of our road network, it is unfortunate that about 3000 people lose their lives annually from vehicle accidents in Kenya. Majority of these accidents are the result of lack of discipline by drivers and motorcycle riders. All road users across our country must abide by the Highway Code and exercise caution and patience. There are now more stringent penalties for traffic offenders following the enactment of the Traffic (Amendment) Act. It is our hope that this will motivate good behavior on our roads.

I also wish to emphasize that road projects are costly investments. Installations such as lights, road signs and guardrails are put in place for the safety of all road users. It is, therefore, in the interest of all of us to be vigilant and report vandals or those who are

found to be trading in road furniture stolen from our roads. I direct security agencies to be more aggressive in dealing with this menace.

Finally, I would like to appreciate the support from our development partners in infrastructure development. I thank the African Development Bank which has partnered with us in the financing of many infrastructure projects across the country. The Bank has funded Lot 1 and Lot 2 of this project.

I particularly thank the Bank President, Mr. Donald Kaberuka, for his unwavering support that has contributed to the transformation of our roads sub-sector. I fondly recall my conversation with Mr. Kaberuka soon after he joined the Bank when we discussed construction of this Superhighway. I am happy that he has joined us to see that our conversation has been transformed into this magnificent Highway. I salute him for his support for infrastructure projects that link African nations.

We are also most grateful to the People's Republic of China for funding Lot 3 of this project through the China Exim Bank.

With these remarks, Ladies and Gentlemen, it is now my pleasure to declare the Nairobi-Thika Superhighway officially open.

Asanteni na Mungu Awabariki."

(2) *Speech by His Excellency the Governor of Machakos County, Dr. Alfred Mutua, during the ground breaking ceremony of Crystal Rivers Project in Mavoko, Machakos County.*

"In the desert of Nevada in the United States, sits a famous city called Las Vegas. The city is in an inhospitable area, with shrubs for trees and hot, uncomfortable weather. If anyone was to conduct a feasibility study on whether to develop a city where Las Vegas sits, the report would say, do not even think about it. However, Las Vegas is where it is and what it is because some people decided that from the desert can rise greatness.

The Americans have a slogan that I abide to that says "Build it and they will come."

- Safaricom CEO, Bob Collymore
- Safaricom Staff Pension Scheme Chairman, Les Baillie
- Retirement Benefits Authority CEO Dr. Edward Odundo
- Safaricom staff, developers and distinguished guests

I salute you all and welcome you to Machakos County, the Place to be.

What we are witnessing here today is an exciting venture not only in Real Estate, but in innovation and economic empowerment.

The development you are bringing to Machakos County through the Crystal Rivers project is one that we have decided to fully embrace. We appreciate your confidence in our County as a suitable investment destination; proof that our efforts towards positioning Machakos as a great place to live, play and do business are bearing fruit.

Being the first venture of its kind here we can only envisage the kind of development it will bring to Athi River and its environs. We foresee an increase in commercial activities that promise to create more employment opportunities, improve the County economy and open up the area to more investment, as investors seek to take advantage of the County's proximity to Nairobi City and JKIA.

We also expect the real estate project to attract homeowners seeking the serenity of living outside the City while at the same time enjoying the benefits of being close enough to it to commute to work every day. As I have always said, we are positioning Machakos as the bedroom or better still, the dormitory of Nairobi. We need to have green areas and recreational facilities within developments.

My Government is keen to support such investments and I want to assure you that I have extensive plans on infrastructure development to enable you to fully enjoy the benefits of your venture.

For example, we are tarmacking roads in Syokimau and Athi River and especially in our neighborhoods. We are installing streetlights, *mulika mwizi* floodlights (translation: high mast lighting) and CCTV cameras so as to make the areas secure. We already have an ambulance for every location in Machakos County and we are transforming our health facilities to be the best in the region.

We are implementing an ambitious water project that will see available and clean piped water in every household.

What we are doing in Machakos is what should have been done hundreds of years ago. We are moving fast in a systematic and efficient manner so that our people can be rescued from decrepit living conditions and poverty. This is the ideology behind our *Maendeleo Chap Chap* (colloquial term for rapid development) manifesto as captured in our Machakos Vision 2020.

I am however, frustrated by what I see as lethargy of our leaders to dream big and execute programs that make us pioneers. Humans walked on the moon on July, 1969, due to a culture of galvanizing talents, recognizing expertise and pulling together to achieve a common goal.

(...) Somewhere in the desert of Nevada in the USA are graves of pioneers of the city of Las Vegas, who dreamt, but more important who acted, and today Las Vegas makes over 45 billion U.S. Dollars per year (That is Kshs. 3.8 trillion more than our national budget.) We have no excuse in Machakos and in extension in Kenya to curtail our dreams.

Build it and they will come.

Machakos the place to be.

God bless you.”

JUNE 13, 2015

- (3) *The response at the Kenya National Assembly on the 19th October, 2006, of the Minister for Roads and Public Works, Honourable Simeon Nyachae, about the demolitions at Mlolongo along the Mombasa Highway.*

(...)“Discussions on this road have taken place for more than 10 years. There were redesigns of this road. There was also consultancy work carried out by overseas firms appointed by the World Bank, in conjunction with our own engineers and consultancy firms. I found this job going on. I am implementing what we agreed on. If there was (sic) any other option, it would have been considered at the right time. This morning someone was asking me: “Why do you not reroute this road to pass through where the chicken house is located?” I said that those chicken(s) occupy land belonging to somebody. What guarantee do I have that it can serve as an alternative route? This land belongs to a private person. We have designed everything. We have secured a loan from the World Bank. For your information, the contractor is on site. How can you hold me back and ask me to look for land elsewhere? All the pieces of land around this project are occupied. Honourable members, whether you like it or not, this project must be implemented. It is part of our programme to decongest Nairobi. We must not delay this project any more. We must construct this road. So we will go ahead with it.”

APPENDIX B: ARTICLES AND STATEMENTS ABOUT EVERYDAY LIFE
AND THE EXPERIENCE OF TRANSFORMED HIGHWAYS.

(1) EXCERPT FROM A BLOG

MOVING YOUR BUSINESS IN NEW DIRECTIONS? DO IT PROPERLY -Sunny Bindra, Management consultant and writer, 14th Feb 2015 09:50 PM PST.

“Nairobi is a madhouse. Getting around is a real pain these days. A simple trip can take a couple of hours out of your day. And if you look at the willingness and competence of the people in charge to solve the awful traffic problem, you have to conclude that it will be jam today, jam tomorrow.

Simple pleasures, like those of popping out in the sunshine for a quick coffee, or lunch in a favourite restaurant, are disappearing fast. Most busy people look at the lost hours and eat at their desks these days. (...) Restaurants could sit back and do nothing as their customers stop braving the traffic or fighting for parking, and stay away. Or they could do something about it.

As seated business declines, delivery business grows. As people get busier, and traffic gets ever more impossible to tackle, the willingness to enjoy meals in your own home or office grows. It is thus in every major city; it will be thus in spades in gridlocked Nairobi.

(...) Our established restaurants are mostly making a hash of delivery. And they will lose out as a result. There is no point in rushing to offer the delivery option if you can't actually deliver on your promise. And too many are set up to fail.

Here are a few things I hear often. Yes, we do deliver. No, we don't have a website with an online menu. No, we don't have a takeaway menu, maybe we can give you a photocopy of the main one. No, we don't keep a database – give me your address details again. No, we don't have any heat-retaining packaging. No, we can't deliver today because we only have one *piki-piki* (translation: motorcycle) guy and he's sick. Oh, you've been waiting for an hour? It's because our guy can't find your place. You said you're where?

People, please. Don't touch this thing unless you can do it properly. If you can't deliver to most customers on most days in 45 minutes or less, either using your own delivery system or an outsourced one, don't even bother. If you aren't even willing to make the basic investments, stay away. Home delivery in Nairobi will soon be done from mobile apps which will allow you to select, order and pay with a thumbprint, and watch your

order make its way to you on the map in the app. That's not science fiction, it's imminent. That's what you're up against.

So if you're a restaurant owner waking up to the new realities, drink some of your own strongest-blend coffee and wake up properly.

Watching the delivery business evolve in Nairobi reveals this: it's not enough to see the opportunity, or have great ideas. The details of how you do things every day matter just as much."

-<http://www.sunwords.com/2015/02/15/moving-your-business-in-new-directions-do-it-properly/> (accessed on 6th April, 2015).

(2) SOCIAL MEDIA UPDATE 1

–Mutuma Mathiu, Journalist, 27th June, 2015.

"I (...) think government should (not) continue to ignore the annoyances and inconveniences that citizens suffer daily. The Makutano-Thika-Nairobi (Highway) is one long jam every day. Yet we have (...) guys walking up and down claiming to run the country. Why can't you sort that out? My own opinion is that upgrading Outer Ring (Road), good as it is, will make the traffic worse on Thika (Superhighway), which is already close to impassable. The problem is that the bulk of the traffic from Eastlands enters the city through (and is drained out through) two strictures - Mombasa and Thika (Highways). (...) Very soon we will not be able to live here."

(3) SOCIAL MEDIA UPDATE 2

– Jackson Njeru: 27th June, 2015.

Lords of impunity:

"I was walking at Mlolongo Town(ship) (at) *Stage ya Juu* (translation: the Mlolongo-Nairobi bus stop) yesterday evening looking for some *mutura* (translation: local grilled tripe sausage) and *kichwa ya mbuzi* (translation: boiled goat-head soup) when I noticed an accident along the highway which had caused a huge traffic jam. I decided to check it out since there was (sic) a lot of people around the scene. (...) I saw a young lady who seemed disturbed and, kind of, uncomfortable being in the middle of people she didn't know (who were milling around the accident scene). I said "hi" to the lady, (who introduced herself as) one Juliet Anyango, and she immediately recognised me from

(my) social media (profile). She told me how she was driving on the left lane when a truck driver who was on the right lane decided to (abruptly) change lanes after the weighbridge (speed) bumps and (...) rammed (into) the right side of her car pushing her off the left lane (onto the road shoulder). The (truck) driver had admitted liability and was apologetic. He claimed Juliet's car was (in) his blind spot when he was changing lanes.

Juliet had called 999 twice but an hour (had) passed and the traffic cops had (still) not arrived at the scene. So I crossed the road and walked to the weighbridge and asked the weighbridge Traffic Police if they could assist (sort out the situation). They then called Athi River police station.

An hour later a male and a female officer arrived (at the scene). The female officer started shouting at Juliet asking her why she (had been) driving carelessly, like a drunk, on the left side of the highway! I asked the officer what she meant since the weighbridge was on the opposite side of the road (considering the direction of turning of the truck). She told me that there is (a) law (that) if you pass anywhere near or past a weighbridge all personal cars in both directions are supposed to be on the right lane and trucks on the left lane. So Juliet (had) definitely (been) on the wrong. (Juliet had been driving towards Athi River). I told the officer that's the dumbest thing I have ever heard in ages and if there is any law like that then why was the truck on the personal car lane.

“Nyinyi mnajifanya mnajua sheria kutuliko! Wewe mama toa gari yako hapo na unipe license yako na insurance na unifuata Police Station. Ama unataka niite breakdown nikuongeze hasara!” she ranted.

(Translation: “You purport to know the law more than the police do! Lady, drive your car off to the side of the road at once! Give me your driving license and insurance sticker then follow me to the police station! Or would you like me to order a tow truck to come and tow your vehicle at your own cost?”)

Some *boda boda* guys called me aside and told me that there was no way Juliet could be on the right since that's a sand truck and the whole Athi River Traffic Police Department is on their payroll:

“Huyu mama traffic huku tunamuita ‘baking powder’ juu anafurishwa na hongo ya kudhulumu raia. Sisi wenyewe tumeona hiyo ajali na zingine hapa kama hii, na hatuwezi kuwa witness juu watakuja hapa watunyanganye manduthi zetu. Lakini msijali brathe, siku yake na mkubwa wake itafika.”

(Translation: “We call that lady Traffic Police Officer ‘baking powder’ because she swells like dough from receiving bribes after repressing common people. We witnessed this accident today and we have seen other accidents, just like this one, happen here. But we cannot be witnesses because (...) (traffic police officers) will come later to confiscate

our motorbikes! But never mind, my brother: one day she and her bosses will face justice.)

“*Poleni sana!*”, (Translation: Sorry!) another *boda boda* guy shouted. So Juliet (and I) went to the Athi River Police Station where the Traffic policewoman accused her of careless driving. She even wanted to detain Juliet’s car at the Police station but we refused (to hand over) the car keys. Juliet was released at around 11pm and has been asked to report to the station on Tuesday.”

“Those sand trucks are a nuisance! They cut through the highway median at undesignated points. They enter the road even when there is oncoming traffic making you brake suddenly. They turn off the road without (...) indicating! They speed on sections of the service roads where you shouldn't, especially, near Nation and Syokimau junctions. They come on the wrong side of oncoming traffic just after the last bump near (the) Mlolongo Primary School footbridge towards Valleyview (Estate). I loathe them with all that I have!” –Aswani.

(4) *SOCIAL MEDIA UPDATE 3*

–Kevin Amulega 27th June, 2015.

“Yesterday I had an accident outside Mater Hospital. I was driving towards South B when I stopped at the zebra crossing to let a woman carrying her baby cross the road. Out of nowhere a *boda boda* bike rider rammed into the back of my car and totally smashed the bumper, missing the taillights by inches. There was a cop at that junction who made sure the *boda boda* guy reimbursed me fully for the repair of the (rear) bumper plus the repainting (job), which were done the same day. So yes, there are many corrupt, selfish and greedy cops, politicians, city (county) employees and many other genres of people who would never help you unless their interests aligned with your needs. But there also exists outliers in the same categories who are trying hard to honestly serve the people they took an oath to be serving. Let's not condemn all of them in general because that will be committing logical and confirmation biases. The rogue ones should be dealt with in a legal fashion so as to avoiding soiling the image of the general (populace). When systems fear the people, there is liberty. When the people fear the system, there is tyranny.”

(5) *SOCIAL MEDIA UPDATE 4*

-Eric Ng'eno, Lawyer and Presidential Speech Writer (2013-?) 9th November, 2012.

Okoth Aura and the president's muddle:

“What's wrong with Mwai Kibaki, CGH? What seems to be the problem with his Excellency the President of the African Republic of Kenya? What's up with the Commander-In-Chief of the Armed Forces of the Republic of Kenya? What's cutting with the Member of Parliament for Othaya, alumnus of Mang'u, Makerere and the London School of Economics? (...)

He is on the Thika Superhighway threatening vandals. I think the old fellow has finally made a dash round the bend. If he wants to threaten vandals, he should do so from State House, flanked by the Service Commanders and the Chief of Staff of the Defence Forces, against a flag-draped backdrop, and before a lectern bearing the Seal of the President of Kenya. (...) I digress. Oh, yes. I was talking about (...) Kibaki. And his pet project; The (Thika) Superhighway. Yes. Vandals. (...)

The Thika Superhighway is a disorientating labyrinth of overpasses, tunnels and convoluted tarmac. It looks like a video game from Ben 10: Galactic Racing. Indeed, I have seen several Ben 10s racing in their (Toyota) Proboxes and (Subaru) STIs unto darkness and death. It is very, very easy to get lost on that road.

Take this day I was headed from town to KIE for instance. KIE is around Ngara. A stone's throw from the Kenya Power Blackout's headquarters. I went down Odeon (Tom Mboya Street), up to Ngara, and missed a turn, first because I didn't see it, found no sign and was obstructed by *matatus* which had hogged the service lane. So I did the next best thing and drove back to Odeon. Only I had to go all the way to Ruaraka before I could figure out a way back. On my way back to Odeon, I saw KIE clearly across the highway. Easy as pie, thought I. Then I took all the right turns, and found myself at the video game bit instead. Tunnel, man. Nice stuff. When I exited, I joined Waiyaki Way and looped back near Consolata (School). Then I began again. The plan was to go to Aga Khan (Limuru Road), if I could find the right floor to drive on, get my bearings and drive to my venue. I was running 45 minutes late. I missed a turn and ended up at Okoth Aura Road. Then I had to seek a way back. I think I adopted the Ruaraka approach once more. Then Odeon. I drove past Okoth Aura Road's sign so many times I have earned the right to demand that City Hall tell me who the hell he is and why he was haunting me. My head was spinning from the confused maze. My ears were ringing from the cacophonous madness. My eyes were spinning from the motorised permutations on the

road. The signs erected to guide at turnings are quite far ahead of the intersections, and posted aloft, in such little lettering that you have to slow down and squint really hard to read your directions. By the time you finally deduce that you're lost again, some equally lost but unrelenting road hog will have obstructed you and begun hooting with singular dedication.

So I went with the flow. My plan was to leave the car at the nearest, and most accessible service station, and call a cab. In short, I was at my wits' end. I decided to enjoy the ride. Then I saw the sign for KIE ahead of me, and drove in with the composure of one who had broken no sweat getting there, nor been harassed by the improvident Okoth Aura, who insanely became the emblem of my troubles.

Imagine the President's escort getting inexorably lost in the superhighway. Imagine them doubling back illegally where they can, and driving *matatus* off the road, who in turn will push you into ditches, bushes, off bridges and so on. Imagine the PPO (Provincial Police Officer) getting clever and jamming the airwaves to prevent you from tweeting that you saw *Baks ng'ethyaing* (translation: colloquial terms for 'Kibaki wandering aimlessly') on the highway. Imagine the gridlock. The chaos. Imagine all roads being closed to traffic to rescue the president from his policemen's madness. Lucy issuing a harsh statement demanding Mzee's return. ODM (The Orange Democratic Movement Party) deriding the President's muddling through his legacy. (Kenya) Vision 2030 Secretariat declaring the Superhighway a regrettable national disaster. Sara Elderkin writing that Kibaki knows nothing about roads (again). RAO (Prime Minister Raila Odinga) claiming that he offered to chauffeur the President, but (that) ANTI-REFORM hardliners rebuffed him. Vandals meanwhile having a field day in the chaos, and reverse-engineering the surface to derive cement, hardcore and steel bars.

Back to the State House you go, Mzee. Leave Okoth Aura to the likes of me.”

(6) *EXCERPT FROM AN ONLINE ARTICLE.*

–Christine Mungai, Mail Guardian Africa: 27th June, 2015.

A heartbreaking week, but this is why africa belongs to those on the margins.

“Sometimes, Africa can break your heart.

In Nairobi, authorities are scrambling to give the city a makeover, before US president Barack Obama’s visit in about a month’s time. Rich red soil has been trucked in from some fertile corner of Kenya, and is being used to hurriedly spruce up the flowerbeds that line the major highway bisecting the city. And all along the routes to the hotels

where Obama and his 500-strong entourage will be staying, the roads are brightly lit and as smooth as glass. On the roads that Obama will not be using, however, the recent rainy season basically left them in tatters. (...) Stories like this are never-ending in Africa – but this week has been particularly depressing. (...) Africa seems to derive its sense of purpose from what the world says and thinks about it. There’s also an almost reflexive expectation that the world owes something to Africa. That’s (...) how Nairobi city authorities can fall over themselves to give a good impression to a visiting US president, but not even display a tenth of the vigour when it comes to making the city habitable for the people who pay taxes to keep it running and actually live in it.”

-<http://mgafrica.com/article/2015-06-25-a-heartbreaking-week-but-africa-belongs-to-those-on-the-margins#.VY7eIN7LmAo.twitter> (accessed on 27th June, 2015).

(7) *EXCERPT FROM A NEWSPAPER ARTICLE.*

–Dr. Bitange Ndemo, Daily Nation Newspaper: 20th July, 2015.

They may rarely profit, but the poor are always innovating.

(...). “In some cases, public resources are used to build a road ostensibly to serve the majority but the road is often built in such a way that it excludes pedestrian needs, yet they are the ones in the majority.

There are, for example, more people who cross Uhuru Highway than the vehicles that use it, but there are no provisions for pedestrians. Indeed the beautification of the highway (for President Obama’s visit) that is going on has virtually excluded the majority.

In an ideal situation, we are supposed to engage with the people and decide on some definitions such as what constitutes good morals in development. When such discussions are done, efforts must be made to provide necessary information for people to make right decisions.”

This is what inclusive decision-making means.”

-<http://www.nation.co.ke/oped/blogs/dot9/ndemo/-/2274486/2799352/-/pq9fhz/-/index.html> (accessed on 21th July, 2015)

APPENDIX C: SAMPLE QUESTIONNAIRE

OUR WAY OR THE HIGHWAY? CHANGING JOURNEYS IN THE INFORMAL CITY

Researcher: Noel J. O. Okello

Affiliation: Oslo School of Architecture and Design (AHO). Institute of Urbanism and Landscape.

UTAWALA DATA

(Note: Before you interview respondents please make sure that you have obtained **their informed consent** and that you have marked out their location on the **map of your area** using a unique number. This unique number must also be written on the questionnaire you fill in for the interview, your annotated sketches and must be written **behind any photo you take of respondent(s)** in that location provided they give their consent for you to take their photos.)

Second Fieldwork Plan

The priority in this round of fieldwork is to assess the nature of the spatial transformations of road networks and how people adapt road space. I will observe, map, and interview the occupants of three selected locations/intersections along transformed road infrastructure. This mapping will examine observed adaptations, specifically the nature and structure of activities, who is involved in these activities, why they choose their locations and how they make it work the way it works for them. The selected locations for these studies are Mlolongo, Embakasi, Athi River-Kitengela, Utawala and Githurai. These locations are chosen because they show varying degrees of adaptation to road space from relatively minimal transformation to extremely radical transformation. They are also relatively diverse in terms of the activities they contain: residential, industrial, institutional and commercial.

PART 1: (FOR STATIONARY PARTICIPANTS)

Case study: Utawala

Interview no:

Number on map.....

What is your name? (OPTIONAL) How old are you?

Date: 06.03.2014, time: 09:13am. Interview no. 01: Ali Mohamed Kihara, age 29, map location 8.

Date: 06.03.2014, time: 11:54am. Interview no. 03: Wanjiku, age 40, map location 22.

Date: 06.03.2014, time: 01:17pm. Interview no. 05: Ernest Kariuki, age 42, map location 14.

Date: 06.03.2014, time: 03:46pm. Interview no. 07: Isaac Nyaga, age 50, map location 18.

Date: 07.03.2014, time: 11:57am. Interview no. 09: Daniel Ngugi, age 45, map location 9.

Date: 07.03.2014, time: 03:23pm. Interview no. 11: Anthony Wambugu, age 30, map location 8.

Date: 07.03.2014, time: 06:34am. Interview no. 13: Peter Munyiri, map location 22.

Date: 07.03.2014, time: 08:40am. Interview no. 15: Martin Wambugu, map location 17.

Date: 08.03.2014, time: 07: 32am. Interview no. 17: Mary Mwendu, age 27, map location 3.

Date: 08.03.2014, time: 08:52am. Interview no. 19: Noel Muhui, age 34, map location 3.

Date: 08.03.2014, time: 09:25am. Interview no. 83: Amos Karanja, age 36, map location 17.

Date: 08.03.2014, time: 12:17pm. Interview no. 85: Priscilla Mukoo Munene, age 33, map location 7.

Date: 09.03.2014, time: 07:21am. Interview no. 71: George Kilonzo Mutune, age withheld, map location 4.

Date: 09.03.2014, time: 10:17am. Interview no. 73: Joyce, age 30, map location 4.

Date: 09.03.2014, time: 01:34pm. Interview no. 75: Isaiah Mwangi, age 44, map location 17.

Date: 09.03.2014, time: 09:46am. Interview no. 77: Sarah Wairimu, age withheld, map location 8.

Date: 16.03.2014, time: 12:43pm. Interview no. 01: John Juma, age 40, tree nursery owner, map location 2.

Date: 16.03.2014, time: 10:11am. Interview no. 03: Kiragu, age 41, mason, map location 3.

Date: 16.03.2014, time: 02:23pm. Interview no. 05: Anne Waithera, age 24, fruit and juice vendor, map location 18.

Date: 16.03.2014, time: 06:32pm. Interview no. 47: John Wekesa, age 31, security guard, map location 18.

Date: 16.03.2014, time: 04:03pm. Interview no. 49: Lucy Kerei, age 33, tailor, map location 3.

Date: 17.03.2014, time: 08:26am. Interview no. 51: Peter Ndugi, age 48, mobile banking agent, map location 4.

Date: 17.03.2014, time: 8:33am. Interview no. 53: Wycliffe, age withheld, shopkeeper, map location 6.

Date: 17.03.2014, time: 9:02am. Interview no. 55: Kimeu, age withheld, policeman, map location 6.

Date: 17.03.2014, time: 10:18am. Interview no. 57: Ben Oiti, age 51, wholesale trader, map location 6.

Date: 18.03.2014, time: 12:28pm. Interview no. 59: Josephine Wangui, age 34, quarry stone dresser, map location 9.

Date: 18.03.2014, time: 02:41pm. Interview no. 61: Mary Njogu, age withheld, carpentry workshop supervisor, map location 14.

Date: 18.03.2014, time: 05:54pm. Interview no. 63: Janet Odoyo, age 38, fish monger, map location 6.

Date: 18.03.2014, time: 05:15pm. Interview no. 67: Belinda, age withheld draper, map location 11.

Date: 19.03.2014, time: 07:36am. Interview no. 65: Ben Njenga, age withheld, shopkeeper, map location 4.

Date: 20.03.2014, time: 03. 28pm. Interview no. 69: Michael Moseti, age withheld, map location 17.

Date: 20.03.2014, time: 02:33pm. Interview no. 103: Timothy King'ori, age 31, map location 22.

Where do you live?

Utawala (11), Ruai (13), Saika (1), Chokaa (2), Njiru (1), Kamulu (1), Mwiki (1), Ruiru (1)

What do you do?

Garage and towing services owner, Hawker, Clothes stall owner, Artisan, Fruit and juice vendor, Shopkeeper, Shoe shiner, Video library owner, Second-hand clothes trader, Tailor, food kiosk owner, Kiosk owner, Butcher, Shoe trader, Beer distributor, Food vendor, Tree nursery business owner, Mason, Fruit and juice vendor, Security guard, tailor, M-Pesa attendant, Shopkeeper, Policeman, Wholesale trader, Stone dresser, Carpentry workshop supervisor, Fish monger, Draper, Shopkeeper, Barber, Car wash worker

Why do you locate your activity/business here?

"I need water to do my business. water is freely available to my business activities here." (1)

"I easily access clients in vehicular traffic along this section of the highway." (13)

"I easily access clients from pedestrian traffic through here." (9)

"There are opportunities for work here." (3)

"I am employed here." (3)

"I am deployed here." (1)

"I do not have sufficient funds to rent space in a building for my business." (1)

“I have an informal lease from the property owner to set up my stall in this location.”

(1)

“People stop and meet other people here.” (1)

“Passengers alight from public transport here.” (2)

“Ease of transportation due to proximity to road” (6).

“I get more of my clients from surrounding residential and commercial areas.” (11)

“High demand here for my business.” (8)

“Ease of accessibility for me.” (2)

“The raw material I use to create my products is available right here.” (1)

“There are many businesses here.” (2)

“The highway.” (6)

“My activity is visible here.” (5)

“No competition for my business in this location.” (1)

“I can grow my business here.” (5)

“Traffic converges here.” (2)

Has your activity always been located here? If not where else has it been located?

“Yes.” (5)

“Yes. 3 years ago: since the road was constructed.” (3)

“Yes. I started my business 2 years ago.” (3)

“Yes. I started my business 5 months ago.” (1)

“No. I located here since the road was built. I was at Ruai before.” (2)

“No. I located here since the road was built. I was at Kawangware before.” (1)

“No. I located here one year after the road was built.” (1)

“No. I was employed in the CBD before.” (1)

“No. I have been here for 18 months.” (1)

“No. I have been here for one year. My business was at City Cabanas before.” (1)

“No. I was transferred here from Dandora.” (1)

“No. I located here one year ago. I was located at Githurai before.”

“No. I located here since the road was built: I was at Saika before.” (2)

“No. I located here 2 years ago: I was at Komarock before.” (1)

“No. I located here one month ago: I was at Kayole before.” (1)

“No. I located here 2 years ago: I was at Kayole before.” (1)

“No. I located here 2 years ago: I was at Kitale before.” (1)

“No. I located here 2 years ago. I was at Saika before.” (1)

“No. I located here 1 year ago. I was at Kitengela before.” (1)

“No. I was at the Ruai junction before. I came after the road was completed.” (1)

“No. I located here 2 years ago. I was at Kamulu before.” (1)

Do you always locate your activity here diurnally? Monthly? Yearly?

“Diurnally.” (24)

“My business is always open.” (2)

“I relocate my business to ngara every tuesday and friday.” (1)

“I locate my business here intermittently depending on my business revenue and my assessment of the viability of opportunities available to me elsewhere.” (4)

Which advantages or inconveniences do you find in being located here?

“My business has easy access to my clients here.” (7)

“My clients have easy access to my business here.” (7)

“I easily access supplies for sale in my business here.” (6)

“I easily access amenities here.” (3)

“My business easily connects to electrical power supply from this location.” (1)

“The increase of vehicular traffic along the highway means more clients for my business.” (10)

“Commercial building rents are affordable here.” (2)

“I walk to work from home.” (2)

“My business is visible from the highway here.” (4)

“I can grow my business here.” (4)

“Increasing local residential population means there will be more customers for my business.” (10)

“There is better security at this location due to presence of constant pedestrian and vehicular traffic.” (6)

“There is better security at this location due to concentration of businesses.” (3)

“There are no constructed shelters by the highway for clients to linger and shop more from my business.” (3)

“This part of the city is a low crime area.” (5)

“There are good links to public transport on this highway.” (2)

“There are no streetlights along this section of the highway.” (4)

“Businesses close at night leaving this area deserted.” (1)

“High competition here reduces my business revenues.” (1)

“It is more informal/relaxed compared to my former location.” (1)

“Easy access to outsourced transport for my products.” (2)

“In this location I am in close proximity to business activities complementary to my own business activities.” (1)

“There is no shelter for me, my business and my customers from rain or sun.” (2)

“The nearest market is far from here.” (1)

“This location is far from the Nairobi CBD.” (2)

“I am harassed here by county inspectors.” (2)

“My business needs a connection to the sewer line. My business is served by a sewer line in this location.” (1)

“I am not harassed by county inspectors.” (1)

“Incidences of flash flooding disrupt my business here.” (1)

“This location is prone to dustiness and strong winds.” (1)

“My business is not as close to the highway as I would prefer.” (1)

“Sometimes vehicles park in my space.” (1)

“My business stays open for more hours.” (1)

“My business revenues fluctuate depending on circumstances and time.” (2)

How do you deal with those inconveniences?

“I find no inconveniences; I just do my business (as usual).” (14)

“I have made my products (ergonomic) and portable.” (2)

“I am more watchful at night.” (2)

“I adapt according to changing climatic circumstances and traffic flows.” (2)

“I seek for ways and means to outdo my business competitors.” (1)

“I close my business earlier in the day than I would like.” (3)

“I struggle to keep my business open even when business is slow.” (1)

“I am looking for a location closer to the Eastern Bypass.” (1)

“I withstand the discomfort of the hot sun and the wet rain.” (1)

“I move away when this area floods.” (1)

“I only go to the market when it is absolutely necessary.” (1)

“I have constructed a temporary structure for my business.” (3)

“I employ a security guard.” (1)

“I have learned to share my space with vehicles.” (1)

“I wake up early so I can beat the morning traffic jam and open my business on time.” (1)

“I wake up early if I have to go to the Nairobi CBD. (1)

“I shop only twice a week in the Nairobi CBD.” (1)

“I pay bribes to county inspectors.” (3)

Is there any form of (communal) organization (in relation to the other activities located here) in the way your activity/business is located and done here? If any form of organization exists describe it.

“No.” (17)

“Yes. An informal savings/welfare organization for roadside tree nursery owners. we meet on sundays.” (1)

“Yes. An informal organization that negotiates with contractors concerning worker’s welfare on nearby building sites.” (2)

“Yes. A small informal traders co-operative.” (1)

“Yes. a small contributory scheme for investment that arranges social activities for its members on sundays.” (1)

“Yes. The Utawala police station prepares patrol rosters.” (1)

“Yes. Business owners in this location arrange collective security for their businesses.” (1)

“Yes. A small informal welfare group.” (4)

“Yes. A barber’s association that negotiates regulations for business permits with the county.” (1)

“Yes. A women’s group.” (1)

“Yes. A self-help group.” (2)

Which of the other activities around this place do you find to be beneficial to your activity/business? Why?

“Motorist traffic: I find clients in traffic jams on the highway or on the shoulders of the highway.” (10)

“Motorist traffic: constant traffic makes the highway secure.” (5)

“Construction of residential and commercial buildings: I find work there.” (3)

“The density of residential buildings: it makes this area more secure and provides clients/customers for my business.” (5)

“Retail shops: I buy airtime, food and supplies from them.” (27)

“Pedestrian traffic: many of my clients are pedestrians.” (10)

“Pedestrian traffic: constant pedestrian traffic makes the highway secure.” (3)

“Police highway patrols: they make me feel more secure here.” (2)

“M-Pesa agents: for my business’ banking and payments.” (15)

“The concentration of businesses: I feel my business is secure because of the presence of many businesses here.” (6)

“Other businesses: they are my customers; I supply them with requisite stock.” (8)

“Motorcyclists: they provide me and my clients affordable transportation.” (2)

“Trucks: they provide my clients transportation for goods bought from me.” (1)

“All activities and businesses: they complement my business/activities.” (1)

“Supermarket: I shop there.” (1)

“Restaurants and food kiosks: I buy meals there.” (28)

“Bus terminal: I find affordable transport there.” (1)

“Bus terminal: I find clients among the people dropped off by buses or waiting for public transport there.” (1)

“Bus stops: I find clients among people dropped off or waiting for public transport there.” (3).

“Pubs and clubs: I find my clients there.” (2)

“Pubs and restaurants: they offer (me) diverse social choices.” (3)

“*Matatus* and buses: I find clients among passengers in *matatus* and buses.” (1)

Which of the other activities around this place do you find not to be beneficial to your activity/business? Why?

“None. All activities here are beneficial.” (16)

“All the businesses in my location are complementary.” (11)

“Rainy season floods: they disrupt my business.” (2)

“Traffic jams: they waste my time and make me angry.” (1)

No response. (2)

Has your activity ever had any links with activities across the highway?

“No.” (6)

“Yes. I shop across the highway.” (9)

“Yes. I shop at the informal market on the other side of the highway.” (6)

“Yes. I often eat at a location across the highway.” (3)

“Yes: I sometimes need to obtain change for my customers across the highway.” (3)

“Yes. I access an M-Pesa agent located on the other side of the highway.” (13)

“Yes. I access public transport across the highway (8).

“Yes. I work on both sides of the highway. (1)

“Yes. I sometimes run errands on the other side of the highway.” (1)

“Yes. I have to take orders and supply my clients located across the highway.” (5).

“Yes. I help my customers access transportation on the other side of the highway for products they buy from me.” (4)

“Yes. My clients have to cross the highway to get to my business.” (2)

“Yes. I frequently cross the highway to look for more business.” (2)

“Yes. My business receives goods for sale and recurrent supplies from across the highway.” (2)

How do you get across the highway? Is it convenient for you? Why is it convenient/inconvenient?

“I do not cross the highway.” (5)

“I cross on foot anywhere. It’s convenient because of my experience as a pedestrian.” (8)

“I cross on foot and as a motorist anywhere. It’s convenient because I know this place.” (2)

“I cross on foot at the intersection. It’s convenient because traffic slows down at the intersection where I locate my activities; there is a busy bus stop there. And I’m used to crossing on foot.” (4)

“I cross on foot anywhere. Motorists slow down and stop when they see my Kenya Police uniform.” (1)

“I cross by car or pick-up truck anywhere. It’s convenient because the road is not busy so it’s easy to cross.” (1)

“I cross on foot nearest to my destination. It’s not convenient. Traffic is heavy at times.” (2)

“I cross on foot at the underpass. It’s not convenient because sometimes vehicular traffic is heavy and I have to wait long. There is no pedestrian crossing.” (3)

“I cross on foot at the underpass. It’s convenient.” (6)

Is there any other information about the highway you would like to divulge?

“No.” (5)

“Restrictions to roadside advertising hurts my business.” (1)

“The county government should allow free roadside advertising.” (2)

“There is no streetlighting my so activities cannot continue past 7pm.” (4)

“The county should erect streetlights along the highway.” (12)

“The county should erect directional signs along the highway.” (1)

“The completion of the highway has hastened real estate development in this neighbourhood.” (3)

“The highway is an enabler of social mobility.” (4)

“The highway is a critical artery of the city.” (2)

“The county government ought to construct light shelter for pedestrians to linger at this roadside location so we can get more business.” (4)

“The road needs expansion for increased vehicular traffic.” (3)

“The road offers opportunities to fledgling businesses/entrepreneurs.” (1)

“The highway is good.” (3)

“The highway is great!” (2)

“The highway has greatly improved access to the Jomo Kenyatta International Airport.” (3)

“The highway has greatly improved my life.” (1)

“The highway should be redesigned to accommodate diverse traffic modes.” (1)

“The road should be redesigned to accommodate pedestrian traffic.” (3)

“The county government should build a modern bus terminus and organise the matatu industry here.” (1)

“The highway has created opportunities for employment.” (2)

“The highway sustains my business (3).

“The bus stop sustains my business (2).

“The county government should erect road signs at popular road crossings to enhance pedestrian safety.

Thank you for your time.

PART 2: (FOR MOVING PARTICIPANTS)

This category includes those who have just alighted from public transport. Please note down the mode of movement i.e. pedestrian, passenger, motorist, cyclist, cart-pusher, donkey cart driver, and so forth

Case study: Utawala

Number on map.....

Interview no:

Mode of movement.....

What is your name? (OPTIONAL) How old are you?

Date: 06.03.2014, time: 10:53am. Interview no. 02: Elizabeth Kibe, age 45, farmer, multi-mode bus/pedestrian, Kwale-Nguluni, map location 3.

Date: 06.03.2014, time: 12:06pm. Interview no. 04: George Otieno Okoth, age 34, driver, motorist, Ruiru, map location 22.

Date: 06.03.2014, time: 04:16pm. Interview no. 06: David Njuguna, age 27, driver, motorist, Ruai, map location 22.

Date: 06.03.2014, time: 05:43pm. Interview no. 08: Emma Waithera, teacher, multi-mode bus/pedestrian, Embakasi, map location 16.

Date: 07.03.2014, time: 12:02pm. Interview no. 10: Samson Muiruri, age 42, bus driver, motorist, Ruiru, map location 8.

Date: 07.03.2014, time: 04:14pm. Interview no. 12: Peter Muiruri, age 55, businessman, multi-mode motorist/pedestrian, Zimmerman, map location 6.

Date: 07.03.2014, time: 06:48am. Interview no. 14: Francis Karanu, shopkeeper, pedestrian, Embakasi, map location 23.

Date: 07.03.2014, time: 09:25am. Interview no. 16: Peter Onderi, age 35, bus driver, motorist, Kariobangi, map location 22.

Date: 08.03.2014, time: 08:27am. Interview no. 18: Carolyne, age 28, housewife, pedestrian, Utawala, map location 8.

Date: 08.03.2014, time: 09:11am. Interview no. 20: Paul Ndirangu, age 29, bus conductor, Ruai, map location 7.

Date: 08.03.2014, time: 10:21am. Interview no. 22: James Munene, age 21, student, multi-mode bus passenger/pedestrian, Utawala, map location 16.

Date: 08.03.2014, time: 11:30am. Interview no. 24: Joseph Ng'ang'a, age 27, bus passenger, Githurai, map location 7.

Date: 09.03.2014, time: 10:15am. Interview no. 26: Beatrice, engineer, motorist, Lang'ata, map location 8.

Date: 09.03.2014, time: 11:23am. Interview no. 28: George Kamau, age withheld, bus conductor, multi-mode bus passenger/pedestrian, Ruai, map location 7.

Date: 09.03.2014, time: 03:38pm. Interview no. 30: Isaac Mungai Njoroge, age withheld, boda boda motorcyclist, Ruai, map location 7.

Date: 09.03.2014, time: 01:18pm. Interview no. 32: Mustafa, student, bus passenger, Utawala, map location 23.

Date: 16.03.2014, time: 01:02 pm. Interview no. 34, Felistus Obare, age 25, student, multi-mode bus/pedestrian, map location 4.

Date: 16.03.2014, time: 10:36 am. Interview no. 36: Cyrus, bus driver, motorist, map location 3.

Date: 16.03.2014, time: 11:16 am. Interview no. 38: Munoru, unemployed, map location 7.

Date: 16.03.2014, time: 06:44pm. Interview no. 40: Ole Yiankaso, hawker, pedestrian, map location 7.

Date: 16.03.2014, time: 09:37am. Interview no.42: Robert Matheri, cart pusher, map location 3.

Date: 17.03.2014, time: 07:48am. Interview no. 44: Nyang'au, bus driver, motorist, map location 4.

Date: 17.03.2014, time: 09:44am. Interview no. 46: Macharia, age 30, bus conductor, multi-mode bus/pedestrian, map location 6.

Date: 17.03.2014, time: 10:16am. Interview no. 48: Noah, age withheld, boda boda motorcyclist, map location 6.

Date: 17.03.2014, time: 08:45am. interview no. 50: Cecilia, age 24, unemployed, pedestrian, Ruai, map location 6.

Date: 18.03.2014, time: 12:11pm. Interview no. 52: George Nyakundi, age 27, carpenter, cyclist, map location 6.

Date: 18.03.2014, time: 02:02pm. Interview no. 54: Kimani Karanja, age 38, cart pusher, map location 14.

Date: 18.03.2014, time: 06:03pm. Interview no. 56: Otieno, age withheld, welder/artisan, pedestrian, Embakasi, map location 6.

Date: 18.03.2014, time: 05:23pm. Interview no. 58: Peter Mulu, age 31, nomadic herdsboy, pedestrian, Ruai, map location 9.

Date: 19.03.2014, time: 08:15am. Interview no. 60: Ndegwa, age 40, electrician, multi-mode bus/pedestrian, Amani, map location 4.

Date: 20.03.2014, time: 06:20pm. Interview no. 62: Nickson, age withheld, accountant, motorist, Utawala, map location 17.

Date: 20.03.2014, time: 07:12pm Interview no. 64: Mercy Kiragu, nurse, bus passenger, map location 8.

Where do you live and what do you do?

Farmer: Kwale-Nguluni, Driver: Ruiru, Driver: Ruai, Teacher: Embakasi, Bus driver: Ruiru, Businessman: Zimmerman, Shopkeeper: Embakasi Village, Bus driver: Kariobangi, Housewife: Utawala, Bus conductor: Ruai, Student: Utawala, Plumber: Githurai, Engineer: Langata, Bus conductor: Ruai, Boda boda motorcyclist: Ruai, Student: Utawala, Student: Utawala, Bus driver: Saika, Unemployed: Thika, Hawker: Utawala, Cart pusher/Water vendor: Ruai, Bus driver: Ruai, Bus conductor: Kayole, Boda boda motorcyclist: Ruai, Unemployed: Ruai, Carpenter: Ruai, Cart pusher: Ruai, Welder/Artisan: Embakasi, Nomadic herdsboy: Ruai, Electrician: Amani, Accountant: Utawala, Nurse: Utawala.

Where are you coming from and where are you going? How long did your journey take?

“Kwale-Nguluni to Thika: 30 minutes“

“Ruiru to Kangundo Road intersection: 30 minutes”

“Nairobi CBD to Joska: 1 hour”

“Embakasi to Ruai: 30 minutes”

“Ruiru to Kangundo Road intersection (return trip): 30 minutes”

“Zimmerman to Kangundo Road intersection via Ruiru intersection: 30 minutes”

“Embakasi Village to Ruai: 25 minutes”

“Nairobi CBD to Kariobangi South: 1 hour”

“Utawala to Ruiru: less than 10 minutes”

“Nairobi CBD to Ruai: 1 hour”

“Utawala to Kangundo Road intersection: less than 10 minutes”

“Githurai to Kamulu: 30 minutes”

“JKIA to Thika: 20 minutes”

“Nairobi CBD to Joska: 90 minutes”

“Kamnyonge Estate to Eastern Bypass intersection: 5 minutes”

“Juja to Taj Mall: 1 hour”

“Utawala to Ruai: 10 minutes”

“Nairobi CBD to Utawala: 1 hour”

“Thika to Utawala: 45 minutes”

“Ruiru to Utawala: 3 hours”

“Utawala water point to Amani: 20 minutes”

“Nairobi CBD to Utawala: 30 minutes”

“Nairobi CBD to Utawala: 1 hour”

“Ruai to Utawala: 10 minutes”

“Ruai to Utawala: less than 10 minutes”

“Utawala to Ruai: 10 minutes”

“Ruai Township to Eastern Bypass intersection: 20 minutes”

“Ruai to Utawala: 10 minutes”

“Utawala to Ruai: 3 hours”

“Nairobi CBD to Ruai: 1 hour”

“Nairobi CBD to Utawala: 45 minutes”

“Nairobi CBD to Utawala: 45 minutes”

How much time have you spent on your journey?

“30 minutes”, “30 minutes”, “1 hour”, “30 minutes”, “30 minutes”, “30 minutes”, “25 minutes”, “1 hour”, “less than 10 minutes”, “1 hour”, “less than 10 minutes”, “30 minutes”, “20 minutes”, “90 minutes”, “5 minutes”, “1 hour”, “10 minutes”, “1 hour”, “45 minutes”, “3 hours”, “20 minutes”, “30 minutes”, “1 hour”, “10 minutes”, “less than 10 minutes”, “10 minutes”, “20 minutes”, “10 minutes”, “3 hours”, “1 hour”, “45 minutes”, “45 minutes”

What do you remember about your journey along this road so far? What (positive or negative) catches your attention on your road trips?

“Nothing.” (1)

“The cold wind blowing into the matatu.” (1)

“There was no pedestrian pavement/footpath.” (5)

“Minimal traffic on the highway.” (8)

“The smooth road/ride.” (16)

“Traffic jam(s).” (4)

“I spend less time to get to my destinations along the highway compared to before the highway was completed.” (2)

“Narrow road doesn’t allow overtaking.” (4)

“Many commercial business locations (accommodating potential customers) along the route.” (2)

“No provision for carts.” (2)

“The slopes are too steep for my cart.” (1)

“The road is narrow.” (1)

“The slopes are too steep for my motorcycle and there are no climbing lanes.” (1)

“I see the conflict between cars, trucks and cyclists.” (1)

“No speed humps.” (1)

“Minimal traffic at off-peak hours.” (1)

“Traffic police did not interfere with my trip!” (2)

“I like the changing view of the landscape.” (4)

“I noticed the recently constructed buildings.” (1)

“The negative slope to my destination eases cycling.” (1)

“There are no streetlights along this section of the highway.” (1)

“I found sufficient water and grass for my livestock along the highway.” (1)

“I was fascinated by the cars on the highway.” (1)

“I was fascinated by the beautiful buildings along Mombasa Highway.” (1)

“Matatus and buses break traffic rules.” (1)

“Slow trucks backed up traffic during my drive on this highway.” (1)

“We slowed down at Saika because the road is potholed.” (1)

“I went through the Nairobi CBD rather than through the bypass to get here; traffic was heavy.” (1)

“I noticed that roadside locations along this road offer a high potential for food businesses and construction materials supply businesses.” (1)

Do you always make this journey diurnally? Monthly? Yearly?

“Diurnally.” (23)

“Weekly.” (1)

“Monthly.” (2)

“Fortnightly.” (1)

“Irregularly.” (2)

“4 times a week.” (1)

“Twice or thrice in a month.” (1)

“It’s my first trip here.” (1)

Which advantages or inconveniences do you find in traveling along this road? How do you feel about these advantages or inconveniences?

“This highway is the most direct path of transportation to my destination.” (10)

“This highway is secure for pedestrians due to presence of vehicular traffic.” (1)

“This highway is secure for motorists because of the presence of other vehicular traffic.” (1)

“This highway has no pedestrian/zebra crossing.” (9)

“This highway has no pedestrian pavement.” (7)

“The pedestrian paths along this section of the highway are narrow.” (1)

“The land adjacent to this highway accommodates many new businesses.” (3)

“This highway’s lack of streetlights makes the road less secure at night.” (3)

“This highway sometimes experiences vehicular traffic congestion.” (4)

“This highway links this part of town to the central business district and other important destinations in the nairobi metropolitan area.” (1)

“I can drive (much) faster than I did before.” (3)

“It allows a smooth vehicular ride.” (15)

“A multitude of highway users stop by my business to buy goods. Consequently my business is profitable” (2)

“Vehicular movement across the changing landscape adds aesthetic pleasure to my experience of the journey.” (2)

“The road space is enclosed by beautiful buildings.” (1)

“Motor traffic hoots at my cart for obstructing vehicles and slowing down vehicular speed.” (1)

“Missing road signs compromise road safety.” (2)

“My trip is faster along this road because there are no traffic police deployed along it.” (2)

“The areas adjacent to the road are more lively than was the case before the road was built.” (7)

“This section of the highway is steep but has no climbing lane. It’s a shortcoming.” (1)

“This section of the highway has no speed bumps. I feel unsafe.” (2)

“I enjoy the changing view of the landscape as I travel.” (5)

“I like the breeze when I cycle.”

“Pedestrians and alighting passengers provide me business. Travelling uphill is more difficult than travelling downhill.” (1)

“There was heavy traffic due to a caravan of slow-moving trucks.” (3)

“There is heavy traffic in the mornings and evenings during rush hour (2).

“This is a great location for business.” (3)

“Open grazing land.” (1)

“Beautiful cars pass through the road.”

“Herds of cattle that cross the road anywhere.” (1)

“Matatus are driven dangerously and their drivers often break traffic rules on this highway.” (2)

“Travelling through this road helps me avoid heavy traffic.” (3)

“Policemen deployed along this highway stopped my matatu and asked me for a bribe.” (1)

“Speed bumps at Ruai slow down our trip.” (1)

“The road is narrow.” (4)

“The slow speeds result into high fuel consumption for my bus.” (1)

How do you deal with those advantages or inconveniences?

“I find no disadvantages. I just go on with my life/business here.” (8)

“I am careful to watch out for vehicular traffic when crossing the road.” (7)

“I use the road only before dusk or after dawn when daylight is available. I do not feel secure using the highway at night.” (1)

“I drive carefully.” (3)

“I schedule my activities so that I can use the road during off-peak traffic hours (9am-3pm).” (1)

- “I overlap other vehicles.” (1)
- “I resist the temptation to overspeed.” (1)
- “I ride carefully.” (3)
- “I tolerate the ensuing traffic jam(s). (11)
- “I use this road because it reduces my travel time.” (2)
- “I will invest (in a business) along this road.” (2)
- “I have to be aggressive on the road.” (4)
- “I pull my cart faster to reduce conflicts with motorists.” (1)
- “I make more trips during off-peak hours.” (2)
- “I am more careful in locations missing requisite road signs along the road.” (1)
- “I drive faster.” (5)
- “I am forced to drive my bus slower.” (1)
- “I give way to larger vehicles and trucks.” (1)
- “I avoid night travel.” (1)
- “I cycle carefully.” (1)
- “I establish better relationships with business owners along the road.” (1)
- “I have to decline work (that requires travelling uphill) sometimes.” (1)
- “I enjoy the smooth ride.” (5)
- “I enjoy the view of the landscape.” (3)
- “I pay bribes to the traffic police.” (2)
- “I will use this road in future.” (1)
- “The driver has to slow down.” (1)

Is there any form of (communal) organization in the way you travel? If any form of organization exists describe it.

- “No.” (19)

“Yes. A SACCO for bus and matatu owners organizes public transportation at bus stops and bus terminals.” (7)

“Yes. An informal welfare organisation for water vendors.” (1)

“Yes. An informal welfare organisation for cart-pushers.” (1)

“Yes. A youth group.” (1)

“No response.” (3)

Which of the other activities located along the road do you find to be beneficial to you as you travel? Why?

“Retail shops: daily supplies and purchase of mobile airtime.” (22)

“M-Pesa agents: payments/banking.” (16)

“Food kiosks: I eat there.” (20)

“Food kiosks: they need to buy their water from me.” (1)

“Temporary kiosks, hawkers and vendors: provide an assortment of goods in convenient locations along my route of movement.” (7)

“Residences: customers for my water business when water supplies are cut off/rationed.” (1)

“All activities along the highway: attract more people and more business.” (6)

“All activities along the highway: assure or improve security.” (4)

“All activities along the highway: provide inspiration for other entrepreneurs.” (1)

“Signs along the road (road signs and other signs): enhance safety and visibility of businesses in the township.” (3)

“Fuel stations: fuel and engine checks.” (3)

“Restaurants: food (2). Supermarkets: shopping.” (3)

“Butcheries: business.” (2)

“Car washes: needful service and amenities for car owners.” (1)

“Informal market: groceries.” (11)

Which of the activities along the road do you find not to be beneficial to your movement along or across the road? Why?

“None.” (19)

“Matatus and buses: they break traffic rules.” (1)

“Traffic police checks: they worsen traffic jams.” (1)

“Pubs and night clubs: they sell alcohol. I oppose the sale of alcohol.” (3)

Does your movement ever cross the highway? Why? At what point/location does this happen?

“Yes. At any point that interests me or where I find it safer to walk on the other side of the road.” (1)

“Yes. To turn my bus around at the Utawala bus terminal.” (3)

“Yes. To turn my bus around at the Kangundo Road underpass.” (2)

“Yes. To turn around or change route anywhere along the road.” (3)

“Yes. To board buses and matatus. I cross at the point that seems to me to be nearest to the bus/matatu (which may not necessarily be a bus stop).” (12)

“Yes. I cross to access my customers. I cross anywhere.” (4)

“Yes. I cross to access my customers. I cross at the underpass.” (1)

“Yes. To pick or drop off my passengers or to stop wherever I am requested to stop. I cross anywhere.” (1)

“Yes. To tout and assist passengers into my bus/matatu. I cross anywhere as long as there are no policemen watching.” (2)

“Yes. I regularly eat at a restaurant across the road. I cross on foot directly to the restaurant.” (1)

“Yes. I cross on my way to work. I cross at an intersection.” (1)

“Yes. That’s how I work. I cross anywhere my work requires me to cross.” (2)

“Yes. I would cross anywhere to save any livestock that wanders onto the road.” (1)

“Yes. I cross to change direction at a roundabout or underpass.” (2)

“Yes. To shop. I cross directly in front of my destination.” (4)

“Yes. I cross to get back home. I cross at an intersection.” (1)

“Yes. I cross at either of two intersections. To access amenities including the bank and a market.” (1)

*Is getting across the highway convenient for you? Why is it convenient/inconvenient?
Has it always been convenient/inconvenient?*

“No. It’s not convenient because of lack of pedestrian/zebra crossing or humps to help reduce vehicular speeds at the point(s) where I cross.” (8)

“No. It’s not convenient because the number of pedestrians and vehicles at the bus terminal is high.” (1)

“No. It’s not convenient at peak traffic hours; too many pedestrians walk along and across the road then and I have to drive slowly and watch out for those who stray onto the road.” (1)

“No. It’s not convenient because of lack of a footbridge at the crossing point(s).” (3)

“No. It’s not convenient because of speeding traffic.” (6)

“No. It’s not convenient because of heavy traffic during rush hour.” (12)

“No. It’s not convenient because I (and my cart) have to compete with vehicular traffic for road space.” (1)

“Yes it’s convenient. I have (adequate) experience in crossing roads.” (7)

“Yes it’s convenient. I am an experienced driver.” (1)

“Yes. It’s convenient because the road is designed with an underpass and requisite deceleration and acceleration lanes.” (1)

“No. It’s not convenient because vehicular traffic does not slow down (either) for cart pushers, or cyclists or pedestrians.” (3)

“I do not cross the highway.” (1)

What do you do about the inconveniences in crossing the highway that you have identified (if any)?

“I just cross. It’s convenient.” (8)

“I do not cross the highway.” (4)

“I am careful when crossing the road.” (15)

“I stop, give way and watch out for other vehicles before crossing.” (3)

“I stop and watch out for pedestrians before crossing.” (2)

“I try to cross only when it’s convenient for me to do so.” (1)

“I cross anyway because I have to as part of my job/business.” (2)

“I wait for the highway to be clear of traffic.” (4)

Is there any other information about the highway you would like to divulge?

“Introduce speed bumps along this section of highway for the sake of pedestrian safety.” (6)

“Introduce speed bumps along this section of the highway for the sake of the safety of people with physical disabilities.” (1)

“Introduce speed bumps along this section of the highway to reduce accidents.” (3)

“Introduce pedestrian/zebra crossings at intersections.” (2)

“Increase official bus stops so that I do not have to drop off passengers at unofficial stops.” (2)

“The county government should expand the highway to reduce congestion and obstruction.” (10)

“The county government should install streetlights.” (12)

“The county government should establish a reliable means of public transit along this route.” (1)

“The highway is a good source of customers for my business.” (3)

“The road should be redesigned to accommodate pedestrians.” (8)

“The road should be redesigned to accommodate cyclists.” (2)

“The county government should construct a climbing lane for vehicular traffic moving uphill.” (6)

“The bypass is convenient as it helps motorists avoid the heavy traffic in the CBD.” (1)

“The government should erect road signs where they are missing so as to ensure the safety of pedestrians.” (4)

“The government should educate road users on road safety on the highway.” (1)

“The government should introduce stiffer penalties for motorists who break traffic rules.” (1)

“The county government should encourage more construction along the road so that buildings can create continuous enclosure along it.” (2)

Thank you for your time.

APPENDIX D: SATELLITE MAPS ON COMPACT DISC

ERROR! STYLE NOT DEFINED.