

# Reinventing the role of plans in guiding urban transformation

A critical assessment of the capacity of Kumasi's  
spatial plans (Ghana) to guide foreseen and  
unforeseen urban dynamics

August

2015

*Author:* Prosper Issahaku Korah (s2635674)

*Supervisor:* Prof. Dr. Gert de Roo

**Master thesis**

Environmental & Infrastructure Planning

**FACULTY of SPATIAL SCIENCES**

**UNIVERSITY of GRONINGEN**



**rijksuniversiteit  
 groningen**

**Reinventing the role of plans in guiding urban transformation:**  
A critical assessment of the capacity of Kumasi's spatial plans (Ghana) to guide foreseen and  
unforeseen urban dynamics.

*Author:* Prosper Issahaku Korah (s2635674)

*Supervisor:* Prof Dr. Gert de Roo

**Master thesis**

Environmental & Infrastructure Planning

August, 2015

---

## **ACKNOWLEDGEMENT**

First and foremost my gratitude goes to the Almighty God, whose invisible hand has guided me throughout the writing of this thesis and also for giving me knowledge and wisdom. I would also like to thank my parents, siblings and all my family members for their support and prayers during my stay in the Netherlands. Words are not enough to express my gratitude to Professor Gert de Roo, my supervisor for his constructive criticisms and comments which brought out the best in me in writing this thesis. Gert de Roo, you are my hero and I will be forever be indebted to you for opening up my mind and thinking in Complexity and Planning. My appreciation also goes to the Netherlands Government for funding my master studies through the Netherlands Fellowship Programme. Finally, I would like to thank Lehlogonolo Makola for always being there for me even at tough times.

## ABSTRACT

Urbanisation has remained dominant not only in the developing regions, but in the entire world. This trend brings inter alia urban configurations that are hardly envisaged by current spatial plans. Spatial plans are lauded because they create an image of how places should develop and ways in which preferred configurations of spatial development will be realised. These spatial plans however, become limited in guiding urban areas in transition. Drawing on Complex Adaptive System (CAS) perspective of cities, this research explored the link between spatial plans and real world development. The main aim of this research was to assess the capacity of Kumasi's spatial plans to guide foreseen and unforeseen urban dynamics. Using mixed methods, including; qualitative data analysis, policy based approach and Geographic Information System (GIS) support analysis, the structure plan and two local plans of Kumasi were analysed. The results showed development in Kumasi emerges out of planned and unplanned processes of change reflecting uncertainty about how independent actors in the urban system will self-organise even when there is a plan. This uncertainty among others results in development (reality) in Kumasi taking a different course in relation to the spatial plans in most cases. We argue that, in order to overcome this, spatial plans should provide the conditions necessary for supporting autonomous development. A non-linear perspective, also known as post-normal science concept of spatial planning is advocated for.

**Keywords:** *Complexity; complex adaptive systems; urban transformation; self-organisation; spatial planning; Kumasi*

## TABLE OF CONTENTS

CONTENT	PAGE
ACKNOWLEDGEMENT .....	i
ABSTRACT.....	ii
TABLE OF CONTENTS.....	iii
LIST OF FIGURES .....	v
LIST OF ACRONYMS .....	vi
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>THE UNCERTAINTY OF URBAN TRANSFORMATION.....</b>	<b>1</b>
1.1 Introduction and background .....	1
1.2 Problem Statement: Urban transformation and non-linearity .....	2
1.2.1 Research Questions .....	5
1.2.2 Research Objectives.....	5
<i>Hypothesis</i> .....	6
1.3 Methodology .....	6
Research Design.....	6
Data and methods of analysis.....	6
<i>Sources and methods of data collection</i> .....	7
Data Analysis .....	7
1.4 Theoretical Background and Structure of Research.....	7
<b>CHAPTER TWO .....</b>	<b>9</b>
<b>THEORETICAL UNDERPINNING .....</b>	<b>9</b>
2.1 Introduction.....	9
2.2 Evolution of planning theory .....	9
2.3 Complexity and Planning.....	11
2.4 Complex Adaptive Systems-The ‘becoming’ .....	13
2.5 Characteristics of CASs (The Becoming).....	14
2.5.1 Self-organisation .....	14
2.5.2 Co-evolution and Adaptation .....	15
2.5.3 Transition (non-linearity).....	16
2.6 Certainty and flexibility in spatial planning.....	19
2.7 Complex Adaptive Systems and Planning Approach .....	21
2.7.1 Placing CASs on the decision making model .....	21
2.8 Conceptual framework.....	23
2.9 Summary .....	24
<b>CHAPTER THREE.....</b>	<b>25</b>
<b>BACKGROUND OF STUDY AREA: CONTEXTUAL SPATIAL DYNAMICS AND</b>	
<b>INSTITUTIONAL STRUCTURE OF KUMASI.....</b>	<b>25</b>
3.1 Introduction.....	25
3.2 Location and physical characteristics .....	25
3.3 Historical development/transformation.....	27
3.4 Kumasi as a Complex Adaptive System (CAS)-The ‘becoming’ perspective.....	31
3.5 How is the Spatial Planning Framework of Ghana supporting or constraining the transformation of Kumasi? .....	33

3.6 Summary .....	36
<b>CHAPTER FOUR.....</b>	<b>37</b>
<b>EMPIRICAL ANALYSES OF PLANNING AND TRANSFORMATION IN KUMASI.....</b>	<b>37</b>
4.1 Introduction.....	37
4.2 Tools for guiding urban transformation in Kumasi.....	37
4.3 Urban transformation in Kumasi- the case and configuration of Aboabo and Ayeduase.....	40
4.4 Spatial Planners encounter with non-linear developments in Kumasi.....	49
<b>CHAPTER FIVE .....</b>	<b>53</b>
<b>TOWARDS A POST-NORMAL SCIENCE CONCEPT OF SPATIAL PLANNING IN KUMASI 53</b>	
5.1 Introduction.....	53
5.2 Theoretical and empirical reflection .....	53
5.3 Towards a post-normal science spatial planning concept in Kumasi.....	55
5.4 Governance strategy for post-normal science spatial planning concept in Kumasi.....	58
5.5 Critical reflection .....	59
<b>CHAPTER 6.....</b>	<b>61</b>
<b>SUMMARY &amp; CONCLUSION.....</b>	<b>61</b>
6.1 Summary .....	61
6.2 Answering the research questions.....	61
6.3 Conclusion .....	62
REFERENCES .....	64
APPENDICES .....	70

## LIST OF FIGURES

Figure 1: Beyond contemporary planning theory: The inclusion of non-linear development over time ....	10
Figure 2: A representation of complexity. ....	12
Figure 3: Basic model of transition.....	16
Figure 4: Towards mechanisms of understanding transition at each of the phases .....	17
Figure 5: Basic model of transition; rationality .....	19
Figure 6: A framework for planning oriented action, in which the relationship between planning goals and interaction is based on complexity.....	22
Figure 7: Conceptual framework .....	23
Figure 8: Location of Kumasi in National and Regional Context .....	27
Figure 9: Bifurcation of Kumasi's transformation .....	28
Figure 10: Structure plan of Kumasi, 1963.....	30
Figure 11: Population growth of Kumasi.....	32
Figure 12: Proposed spatial planning system.....	35
Figure 13: Present Structure of Kumasi.....	40
Figure 14: Local plan of Aboabo .....	42
Figure 15: Overlay of Local plan of Aboabo on satellite imagery .....	43
Figure 16: Typical Aboabo Street.....	44
Figure 17: Base map of Ayeduase .....	46
Figure 18: Current state of development in Ayeduase.....	47
Figure 19: A structure in a floodplain and a gated house in Ayeduase.....	49
Figure 20: Transition and planning approach .....	58

## **LIST OF ACRONYMS**

CASs	Complex Adaptive Systems
CBD	Central Business District
DPU	Development Planning Unit
DMU	Development Management Unit
GIS	Geographic Information System
GSS	Ghana Statistical Service
GMA	Growth Management Act
JICA	Japan International Cooperation Agency
KMA	Kumasi Metropolitan Assembly
LGA	Local Government Act
MDGs	Millennium Development Goals
MEST	Ministry of Environment, Science and Technology
SPF	Spatial Development Framework
TCPD	Town and Country Planning Department

## CHAPTER ONE

### THE UNCERTAINTY OF URBAN TRANSFORMATION

Many of the significant urban transformations of the new century are taking place in the developing world. In particular, informality, once associated with poor squatter settlements, is now seen as a generalized mode of metropolitan urbanization. (...) urban informality highlights the challenges of dealing with the “unplannable” exceptions to the order of formal urbanization (Roy, 2005)

#### 1.1 Introduction and background

Urban areas are continuing to experience dramatic progress, as a result of rapid population growth (Cohen, 2006). Amongst others Ichimura (2003) observes, urbanisation to be dominant not in only in the developing regions but also in the entire world. Africa’s urbanisation rate is described as the fastest in the entire world and the projections are that by the year 2030, over half of the African population will be living in urban areas. Ghana as a developing country has already achieved this milestone in 2010 with 51 percent of its population living in urban settlements (Ghana Statistical Service(GSS), 2012).

Furthermore, the projections are that by the year 2015, nearly 60 percent of Ghanaians will be living in urban areas or settlements with more than 5,000 populations (Farveque-Vitkovic et al., 2008: quoted in Adarkwa, 2012). The rapid growth in the population of urban areas is creating an urban morphology that is hardly envisaged during the planning stage. The growth, transformation and outward expansion of urban areas are associated with the many environmental, social and economic problems faced by these areas (Gasiorowski & Polawski, 2014; Oduro et al., 2014) and spatial planning becomes more critical (Atribigbola, 2008).

Montgomery (2008) attributes the progress and transformation of urban areas to four main factors; *globalization*-allowing international networking, *decentralization* especially in poor countries which places greater responsibility on local governments (see also Hudalah & Woltjer, 2007), *evolving international development strategies* to fulfil the Millennium Development Goals (MDGs) and *climate change* which puts several cities at risk of flooding, storm and other extreme weather conditions. While his categorisation might be considered somewhat normative and changes with time, nevertheless, these emerging factors can no longer be overlooked in terms of how spatial plans are conceived and operationalised in urban areas.

Development plans are fundamental apparatuses of spatial planning practices. They create an image of how places should develop and ways in which preferred configurations of spatial development will be realised. However, these development plans are increasingly critiqued for their rigidity when faced with changes in context (Alfasi & Portugali, 2007; Balducci et al., 2011a ; Rauws et al., 2014). The mandate of ensuring healthy urban environment always seems to have grown beyond the capacity and resources of city authorities in instances of dynamism and uncertainty (Nwaka, 2005).

More recently, the city of Kumasi has deteriorated as a result of inadequate infrastructure, urban sprawl and congestion (Anigye Newsletter, 2013; Forkuor, 2010; MEST<sup>1</sup>, TCPD<sup>2</sup> & JICA<sup>3</sup>, 2012; Oduro et al., 2014). This has necessitated the need for a comprehensive urban development plan to guide the future development of Kumasi. Japan International Cooperation Agency (JICA) in collaboration with the Town and Country Planning Department (TCPD) under the Ministry of Environment, Science and Technology (MEST) has formulated a ‘Comprehensive Urban Development Plan for Greater Kumasi’. The goals of this plan among other things are to produce a: (1) Spatial Development Framework for Greater Kumasi Sub-Region, (2) Structure plan for the Kumasi Conurbation and (3) Capacity development for spatial planning (Anigye Newsletter, 2013).

The project has been lauded because it is believed it would control the high spate and indiscriminate physical development in and around Kumasi, integrates land use and infrastructure for the sustainable development of greater Kumasi sub-region in the long term, and is expected to promote economic development and environmental conservation, as well as orderly urban development (Freiku, 2013). The main issue however is; are these comments and praises regarding the project well grounded? The purpose of this research therefore is to assess the capacity of Kumasi’s spatial plans to guide foreseen and unforeseen urban dynamics.

## 1.2 Problem Statement: Urban transformation and non-linearity

Several planning literature have shown how ‘plan making’ is based on formal, procedural,

---

<sup>1</sup> Ministry of Environment, Science and Technology, Ghana

<sup>2</sup> Town & Country Planning Department, Kumasi, Ghana

<sup>3</sup> Japan International Cooperation Agency

normative, ‘Utopian’ and Newtonian ideals and how to achieve these ideas (see for example Albrechts, 2006; Alfasi & Portugali, 2007; de Roo, 2010). This is generally grounded on the available facts and information, the being, the here and now and what others like Rittel (1972) terms, solving ‘tamed’ problems which usually require ‘blue print’ plans. There are several criticisms of this normative approach to plan making as its outputs (plans) are usually rigid and do not respond to contextual changes such as socio-economic, environmental and political conditions and so therefore are incapable of controlling the city’s development (Alfasi & Portugali, 2007; Rauws et al., 2014). These plans also exhibit a disconnect between the goals and aims contained therein and the actuality of development because their impacts on the context as well as the influence of the context on them, for example, changes in socio-economic conditions, are usually ignored (Alfasi & Portugali, 2007)

It is widely recognised that the development of urban areas, understood in socio-economic and environmental terms, cannot be ‘planned’ by government action in a linear way, from intention to plan, to action, to outcome as planned. Even where a government agency controls many of the resources for physical development and acts in an integrated and coordinated way, socio-economic and environmental activities make use of the physical fabric of urban areas in all kinds of ways that are often difficult to imagine in advance, let alone predict. What goes on in urban areas is just too dynamic, ‘intricate and mazy’ (Geddes, 1968: Quoted in Healey, 2007)

Traditional land use planning is still valid in certain situations as there is still a knowable reality (de Roo, 2010). However, ‘rapid changes in contemporary economic, environmental and social conditions are making policy-makers and politicians increasingly aware of the limitations of prescriptive, longer-range plans that specify precise targets for provision of industrial floor space, housing units and so on’ (Balducci et al., 2011b). These longer term plans, usually, 15-30 years are becoming problematic for managing urban areas in transition, particularly, if they are not accompanied by concrete and smaller scale plans at the neighborhood level (Alfasi & Portugali, 2007)

This has prompted the debate on suitable approaches to planning. There are several calls for planning theory and practice that embrace uncertainty, multiple possible alternative futures and flexible decisions (Albrechts, 2006; de Roo, 2010; Rauws et al., 2014). The Commonwealth Association of Planners (2006) terms this kind of planning practice the ‘New Urban Planning’, which is planning that respond to social reality and development. It is also termed ‘strategic

planning’ (Albrechts, 2004; Wiechmann, 2007), ‘strategic planning in uncertainty’ (Balducci et al., 2011a). Alfasi and Portugali (2007) are of the view that planning should be conceived as an internal activity; by having plans generated from within an urban system, instead having plans designed and applied to it by an external planner. They further argue that no plan is capable of fully controlling the development of the city.

The notion of complexity in urban planning is gaining recognition because cities or urban areas are now seen as open systems which exchange matter, information and energy with their environment and with numerous parts which make it difficult to establish causal relations among the parts. These characteristics make it difficult to predict the behavior of urban systems and to direct their growth in a particular pattern (Allmendinger, 2009; de Roo, 2010; Portugali, 2006). Such uncertainty has made people like de Roo (2014) to argue that the role of the planner in such situation is to be ‘trend watcher’ and transition manager. Furthermore, urban areas are believed to be developing out of ‘self-organisation’ in some circumstances (Portugali, 2006).

Spatial planning which is necessary for determining future desired patterns of development is believed to be unable to keep pace with urbanization and development especially in developing countries (Nwaka, 2005). In Ghana for instance, spatial planning documents usually become outmoded and obsolete before implementation begins (MLGRD, 2010). This makes authors like Alfasi and Portugali (2007) to question the ‘dependence on large-scale plans and policies for the regulation of urban form’. Several authors have written about the growth, development and management of Kumasi (see for example Adarkwa, 2011; Amoateng et al., 2013; Amoako & Cobbinah, 2011; Oduro et al., 2014). Paradoxically, all these authors are recommending development control as a way of ensuring sustainable development of Kumasi. As Oduro et al. (2014) states: ‘the adoption and vigorous enforcement of an urban planning system that is metropolitan-wide in approach and long-term in perspective, is the way forward’ (p.29)

Yet Albrechts (2006) argues that ‘traditional land use planning—being a more passive planning approach aimed at controlling land use through a zoning system and regulations—seems unfit for bridging the gap between plan-making, political decision-making and implementation’ (see also Frenkel & Jahshan, 2014; Ran Wei & Grubestic, 2014 ). In Ghana,

there is no attempt to assess the capacity of the current plans to guide the development of urban areas. It is still assumed, current spatial plans are capable of controlling and transforming cities which is not the case as revealed from literature. In an attempt to fill this gap, and to provide the basis for rethinking the role of spatial plans in cities' development, this research will assess the structure plan of Kumasi (Ghana) to determine its ability to guide foreseen and unforeseen urban dynamics. The main research question is: what are the appropriate tools supporting urban transformation? The following sub-questions are further developed to help answer the main question:

### **1.2.1 Research Questions**

- ✓ How do spatial plans incorporating uncertainty support the transformation of urban areas?
- ✓ How do spatial planners in Kumasi (Ghana) incorporate uncertainty in spatial plans to support the transformation of Kumasi?
- ✓ Would this research give reasons to rethink spatial plans in Ghana?

The above research questions are based on both theoretical and empirical underpinning. Theoretically, the focus is on analysing urban transformation with the help of concepts derived from complexity science and complex adaptive systems in order to lead to a more flexible understanding of development trajectories of urban areas and this relates to question I. Empirically, the objective is to enhance an understanding of drivers underlying urban development using Kumasi as a case and how planning strategies can be designed to make them adaptive to changing socio-economic, physical/environmental and political conditions in the city

### **1.2.2 Research Objectives**

The objectives of this research are to:

- ✓ Establish how spatial plans incorporating uncertainty support urban transformation
- ✓ Determine how spatial planners in Kumasi (Ghana) incorporate uncertainty in spatial plans to guide the transformation of Kumasi
- ✓ To propose a spatial planning approach to guide non-linear urban development in Ghana

From the research questions, the below hypothesis is developed to help tailor the research towards successfully attaining the objectives.

*Hypothesis - Urban areas in transition are in need of dynamism and as such 'blue print' plans are not the appropriate tools in guiding their transformation*

This hypothesis rejects the technocratic and functionalism approach to guiding urban transformation. This is termed as modern planning which seeks to plan without contradiction or conflict through presenting a homogeneous future (Holston, 1995: Cited in Allmendinger, 2009). This type of planning is based on 'rigid path-dependent extrapolations' (Balducci et al., 2011b) as tools for determining long term spatial development policies (normally 15-30 years). It is instead based on the notion that cities are out of equilibrium, not fixed and cannot be predicted. That the process of change should be based on universal understanding of the context (social, economic and political) by adopting short term strategies, which calls for the need for planning to be constantly reinvented (de Roo, 2014).

### **1.3 Methodology**

#### **Research Design**

The case study approach was adopted for this research. This allowed for investigation into the phenomenon of urban transformation and enhances understanding of this phenomenon within its real-life context (Yin, 1994). The structure plan of Kumasi together with two local plans was analysed to give insight on the effectiveness of these spatial plans in guiding urban transformation. The structure plan was selected because it is the main spatial development framework for guiding the development of Kumasi. Two neighbourhoods, Aboabo and Ayeduase, were purposively selected based on the background that the concern neighbourhood meet one of the following criteria;

*The neighbourhood should be located close to the Central Business District (CBD) and has a local plan (Aboabo); the neighbourhood should be a peri-urban area and has a local plan (Ayeduase).*

These criteria ensured that the neighbourhoods that were analysed provided a situation specific reflection of the current state of planning and development of Kumasi. It also enabled comparison and contrasting of development at both the core and fringes of Kumasi.

## Data and methods of analysis

### *Sources and methods of data collection*

Data for the research was obtained from both primary and secondary sources. The primary data was in the form of maps, Google images and aerial photographs of the study area. Observation with the help of photographs was also employed to validate the Google images. Interview with the help of semi-structured questionnaires was done with a representative each of Kumasi Metropolitan Town and Country Planning Department, Development Planning Unit and Development Management Unit. These institutions were purposively sampled because they are directly involved in the planning and development of Kumasi. On the other hand, secondary data was obtained through review of relevant literature. Articles, reports, journals, books, the internet and other relevant materials on urban transformation were consulted.

### **Data Analysis**

Data for this research was analysed using qualitative and ‘policy-based approach’ (Zhao et al, 2009). Considering, the aim of the research was to determine the performance of spatial policies (goals) in the face of non-linearity of development. The policy-based approach was used to measure goal indicators of the spatial plans against development on-the ground. Using Geographic Information System (GIS), the local plans were geo-referenced, digitized and overlaid on satellite imagery to reveal how plans were able to guide the growth of Kumasi or otherwise. The findings of the analysis were validated based on the theoretical background which is that cities are complex adaptive systems (CASs) and exhibit characteristics such as ‘co-evolution’, ‘non-linearity’, ‘self-organisation’ and ‘emergence’.

### **1.4 Theoretical Background and Structure of Research**

**T**he research is based on the theory of complexity and complex adaptive systems (CASs). In this research, the development of urban areas and cities are regarded as CASs which have independent actors, which together shape their development and pattern of growth. Applying CAS to urban areas implies that they change through interaction with a dynamic environment (context) while being robust (de Roo, 2010; Rauws et al., 2014). The research is organised into six chapters; chapter one presents, the background and problem statement as well as the methodological framework. Chapter two is about the theoretical underpinning of the research.

The characteristics of CASs in particular and implication for spatial planning are discussed. Chapter three builds on chapter two, by presenting evidence on the planning and development of Kumasi, with particular emphasis on the nexus between the structure plan, planning framework and urban development. Chapter four highlights the empirical evidence of Kumasi's development by presenting two cases at the neighbourhood level. In Chapter five, an alternative concept of spatial planning is presented. A critical reflection on the pros and cons of this concept is also proffered. Chapter six, the last and final chapter, is about summary and conclusion of the research.

## CHAPTER TWO

### THEORETICAL UNDERPINNING

#### 2.1 Introduction

According to de Roo (2010), complexity is qualification of a reality in which spatial situations are discontinuously changing and are dependent on their context. A complexity perspective allows us to bridge space and place (Portugali, 2006) as it provides conceptual tools that enhance our understanding of how places (cities) evolve through time. The development of urban areas is regarded as complex adaptive system (de Roo, 2014) which means they exhibit characteristics such as self-organisation, coevolution, transition and adaptation. These characteristics limit functional planning-one that is based on command and control to guide the transformation of urban areas.

#### 2.2 Evolution of planning theory

Theory offers a means by which the regular infusion of new ideas can be understood by practice. Theory can be an early warning system preparing planners for new influences. It can also help to consider how these new influences can be absorbed into current practice, what the consequences could be, and what alternative responses are available. (Thompson, 2000, p. 130: Quoted in Allmendinger, 2009, p.31)

Planning theory has therefore undergone several evolutions since the 1960's in search of planning strategies to deal with real world planning problems. Planning theory then becomes an on-going discussion (Allmendinger, 2009) because every now and then, planners are increasingly confronted with new and emerging challenges (Renn, 2008, p. 42: Cited in Hartmann, 2012). This requires new perspectives and ways of thinking in order to solve real world problems which to some extent are inconsistent and wicked (Hudson et al., 1979; Rittel, 1972).

In the view of Allmendinger (2009), planning theory has been in a 'hyperactive' state. This description however is not absolutely true because the 1960's and 70's witnessed the dominance of 'positivism' (technical rational) which sought to present a view that planners have absolute control if they have all the facts and information about a phenomenon. The late 1980's and early 21<sup>st</sup> century also witnessed the dominance of communicative rational planning theory.

Inferring from this trend, it is plausible to conclude that at least planning theory changes in every 15 to 20 years.

Positivism was based on knowledge acquired through empirical and mathematical observations, establishing direct causal relationships between objects (Allmendinger, 2009, p. 32). This influenced the systems paradigm and rational planning theories (p.32). The systems view of planning is about the recognition that cities are complex set of connected parts, which are in constant flux (Allmendinger, 2009, p. 51). According to systems theory, the components of the system interact continuously and have an effect on each other, for example, employment and housing are different but related components of the city's system. A change in one, affects the other. An increase in employment will lead to increase in demand for housing which will in turn affect the natural environment. This understanding was the basis for proposing sophisticated models for managing urban areas.

The systems theory as a decision making tool, has been criticised (Rittel and Webber, 1973) because in their view, 'the search for scientific bases for confronting problems of social policy is bound to fail because these problems are wicked and there are no solutions in the form of definitive and objective answers'. On the basis of this, planning theory has evolved in search of new ideas and ways of confronting complex planning issues.

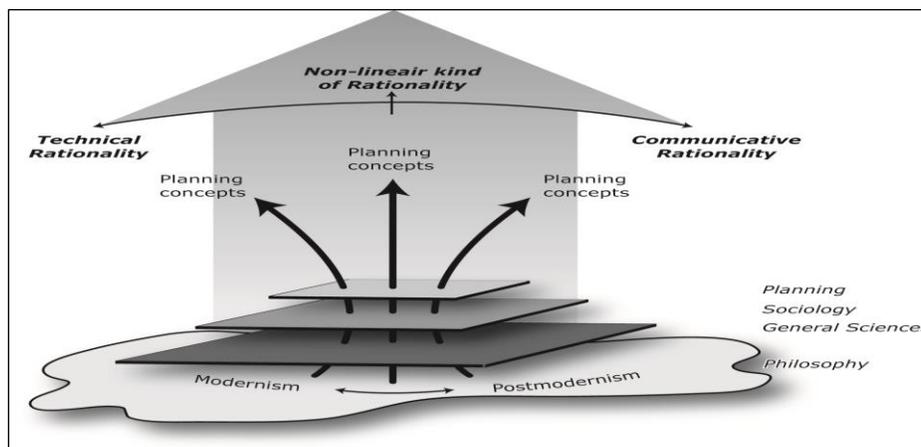


Figure 1: Beyond contemporary planning theory: The inclusion of non-linear development over time

Source: de Roo, 2010

Planning theory can now be positioned under two broad extremes, ‘Technical Rational’ at one end and ‘Communicative Rational’ at the other (de Roo, 2010, p. 25). It is been argued that contemporary planning theory is beyond these two extremes and now involves some element of ‘post structuralism’ and ‘complexity’ (Allmendinger, 2009; de Roo, 2010) because society is dynamic and fluid. Figure 1 shows a framework in which non-linear rational as a new and emerging planning paradigm is positioned alongside technical and communicative rationales. Non-linear rationality accepts the uncertainty of development over time. The ‘becoming’ of the context which is being planned for is the crust of this theory. Since society is moving fast and increasingly becoming complex which translate into ‘wicked problems’, planning theory must adapt. This implies that planning theory must make ‘sense’ of what is happening (eg socio-economic, environmental and political) in order to have the tools and concepts for planning the future (Allmendinger, 2009). This is because the future is not known and is also full of uncertainties and complexities.

### 2.3 Complexity and Planning

Complexity science as a concept is rooted in several disciplines such as physical and biological sciences, mathematics, computer sciences and more recently the social sciences (Innes & Booher, 1999). According to de Roo (2010), complexity is a qualification of a reality in which spatial situations are discontinuously changing and are dependent on their context. Complexity perspective allows us to bridge space and place (Portugali, 2006) as it provides conceptual tools that enhance our understanding of how places (cities) evolve through time. Complexity thinking in planning means that the focus of planning should no longer be only the ‘being’ that is the traditional approach to planning which considers the current state and uses that as basis for projecting and planning, but should embrace uncertainty by having multiple plan options (de Roo, 2010, p. 19). Alfasi (2004) has categorized this as ‘Just-in-case’ (traditional approach to planning) - one that is based on the being and ‘Just-in-time’ - planning that embraces uncertainty by recognizing cities as self-organizing systems.

The growing recognition of cities as complex systems means that planning and its objectives have to be rethought in order to match the dynamic reality ‘out there’. Complexity is based on an understanding that objects are made of numerous parts which are nested at various scales and levels and are inter-dependent which makes it difficult to establish direct causal

relations (causal proxima) between the parts. According to Allmendinger (2009, p.190), complexity is based on an understanding of places (cities) being connected spatially and relationally with other places at different levels, as well as with individuals, households and neighbourhoods.

A change in one part affects the other as these are inter-dependent at different scales. Cities are viewed as complex systems because they are open in that they exchange matter and information as opposed to closed systems. They also exhibit non-linear development and order and stability in such systems is usually attained through a process called ‘self-organisation’ rather than planned intervention (Alfasi & Portugali, 2007).

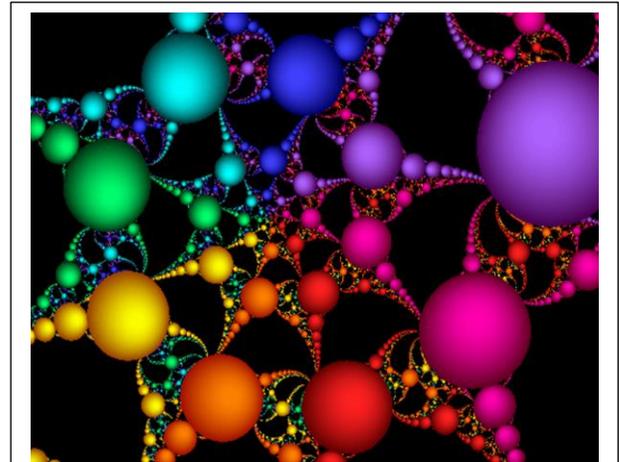


Figure 2: A representation of complexity.

*Base on:*

*<http://www.ece.uc.edu/~casl/welcome.html>*

This revelation has several implications for the planning, transformation, development and governance of cities.

First, a complexity perspective of cities means that there is the need to consider mixed approaches to planning and governing cities. The inherent non-linearity exhibited by cities means only top-down approaches to planning will not be effective; rather both bottom-up and top-down approaches should be considered but with recognition for the time factor (the becoming) and creating conditions that will promote adaptation and self-organisation (Rauws et al., 2014). As argued by Rauws and de Roo (2011), characteristics exhibited by complex systems (cities) means that their development cannot be managed solely by functional planning with a focus on command and control, or by approaches that build on process (collaborative and communicative planning).

Secondly, the goals and roles of plans will also have to change. Portugali (2006) argues that in complex cities, ‘(...) small-scale plans may be as effective and significant as large-scale plans, while large-scale plans may be powerless and have little influence on the city’. The

argument here is that long term planning will be ineffective in complex cities because they are dynamic. This is supported by de Roo (2010) who argued:

Growing complexity due to a progression from orderly towards chaotic situations means that precisely defined outcomes will have to be substituted by an appreciation of an increasing number of options to select from during the planning process (p.28)

Finally, complexity thinking in cities means a paradigm shift in the governance of cities. Initially cities were managed through regulatory instruments such as zoning and development control. Such instruments to some extent are still useful in contemporary cities, because there is still a knowable reality (de Roo, 2010). Cities are also understood to be developing on the edge of order and chaos (de Roo, 2010). This means under a stable condition, the objective of the city governance should be that of facilitation/empowerment of the actors (developers) to ensure creativity. While in a chaotic environment, the focus should be: aligning the growth towards desired pattern. This is so because while autonomous development is encouraged in an environment (city), some minimum and restrict regulations are required to direct development.

In effect, though regulatory development control is still relevant in urban areas to avoid destructive chaos, for example occupation of flood risk zones, their effectiveness is limited under some circumstances, because we are in an era where cities and urban areas are increasingly interacting and exchanging knowledge and information through a process called globalisation. This makes cities highly dynamic, unstable and unpredictable. This means that our focus on cities will shift more to the ‘becoming’ (de Roo, 2010; Allmendinger, 2009) and the role of the planner is be a ‘transition’ manager and trend ‘watcher’.

## 2.4 Complex Adaptive Systems-The ‘becoming’

Complex Adaptive Systems (CASs) are described as being both robust and dynamic. They are able to maximize the benefits of stability while retaining the capacity to change (Phelan, 1995, p. 6: quoted in de Roo, 2010, p.31). CASs as described by Wadhawan (2013) are systems, that not only evolve like any other dynamical system, but also learn by making use of the information they have acquired. CASs can undergo biological-like evolution by not just operating in an environment created for them initially but have the ability to alter that environment (Wadhawan, 2013). A marketplace continually evolves in order to improve its odds

of survival. A marketplace will have to respond or adapt to factors like changes in taste and preferences, technological advancement and prices. Other examples include a baby learning to walk and a beehive adjusting to the decimation of a part of it. These require feedback and learning processes.

De Roo (2010) refers to CASs as Class IV systems, which continue to evolve and transform as an entity. This means the structure and function of such systems continue to change. Urban areas are regarded as CAS because they are robust in that, they change their form without ceasing to exist. There can be change in the boundary of a city; however that city's system will be the same. Similarly, a city can be burned down several times and it is likely that it would always continue to carry on development. Cities are also flexible because they are able to adapt to public needs and create new opportunities, for example cities were once places for safety, market places, and industrial hubs. Cities are now seen as places of creativity, knowledge and communication (Byrne, 2003; de Roo, 2010).

The 'becoming' aspect of CASs is what is of interest to contemporary planners because CASs do not cease to continue to evolve and this according to de Roo (2010) is known as development and progress. This requires a careful examination of such systems in the context of prevailing political, socio-economic and environmental conditions which are the basis for the internal configurations of these systems and how these conditions change with time.

## **2.5 Characteristics of CASs (The Becoming)**

CASs exhibit certain inherent characteristic which when understood can provide an alternative perspective on how to approach the policy environment and to create plans that are active in order to respond to changes in this environment

### **2.5.1 Self-organisation**

According to Rauws and de Roo (2011), 'self-organisation can be defined as a process by which interactions within the system lead to the spontaneous emergence of a coherent spatial or organizational structure without outside coordination'. This means that self-organising systems have the capacity to maintain order and stability without any outside interference.

CAS(s) are seen as self-organising systems because their adaptations are usually influenced by contextual and internal processes (Wolfram, 2002: Cited in Rauws et al., 2014).

This means the system is always in a constant reconfiguration in order to ‘create the best possible fit with the environment’ (Rauws et al., 2014). Feedback and feed forward loops and processes of learning are often critical in self-organising systems. Also in self-organising systems, actors (individuals) at one level may become the ‘building blocks for individuals at the next higher level of hierarchy and based on new experience (obtained by feedback), CASs may constantly adjust and rearrange their building blocks’ (Wadhawan, 2013). An example is the case of the cityscape of Tel Aviv, where an action by one inhabitant to close his balcony and made it a small room, led to the closing of almost all balconies in the city thus altering the cityscape. Cities or urban areas seen as self-organising systems lead to an understanding that they cannot be regulated by any plan, not even the one drawn by municipal planning authorities (Alfasi & Portugali, 2007)

The self-organising feature of urban areas, which is non-linearity in development and progress, means using comprehensive and long term plans, to regulate their transformation will not be able to match real world development. Comprehensive and long term land use plans by their nature become obsolete even before implementation begins (Alfasi, 2004). Rauws and de Roo (2011) therefore conclude that urban systems should be designed in a manner that they have sufficient capacity to reorganise. This means plans should have some level of flexibility to allow for creativity and re-adjustment to match dynamic reality.

### 2.5.2 Co-evolution and Adaptation

According to the *Encarta Dictionary*, coevolution refers to the joint development and adaptation to external changes of two or more interdependent species. This means coevolving systems are capable of adjusting themselves in terms of their behaviour, nature and form in order to survive in a new or emerging environment. In the context of urban planning and development, it means the structure and function of urban areas coevolve jointly. This refers to the continuous reformation that occurs in urban areas with future developments being unpredictable (Rauws & de Roo, 2011).

The concept of co-evolution directs our indulgence to the fact that changes in a system and its environment are independent (Gerrits, 2012: Cited in Rauws et al., 2011). This means the urban morphology is constantly altered by the various actors who shape it according to their

needs because the urban system allows and respond to these changes. Similarly when an urban system goes through turbulence and shocks such as flooding, the actors within it are able to adapt to these events which makes the system resilient and robust. According to Rauws and de Roo (2011), coevolution prevents the realisation of predetermined end-goals. This is because predictability in coevolution is not possible. The city of Kumasi spatial structure epitomizes coevolution where all the communities around the central business district (CBD) have evolved from purely residential areas to mixed-use zones and are in the process of becoming purely commercial.

### 2.5.3 Transition (non-linearity)

**T**ransition is a transformation in which a system changes fundamentally its structure and function over a period of time. A transition can be ‘defined as a gradual, continuous process of change where the structural character of a society (or a complex sub-system of society) transforms’ (Rotmans et al, 2001).

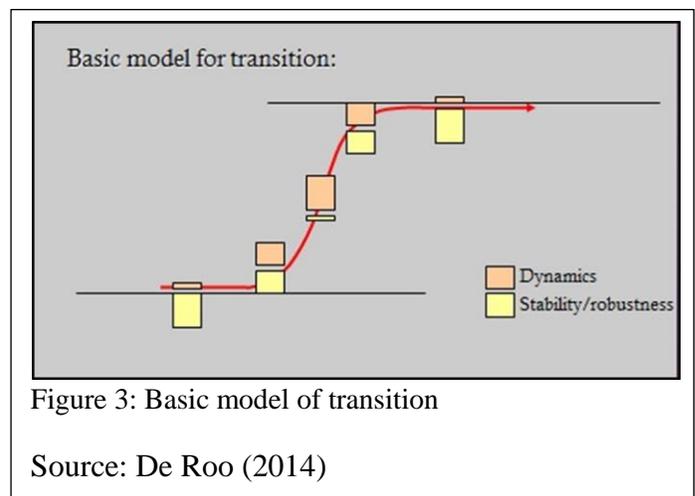


Figure 3: Basic model of transition

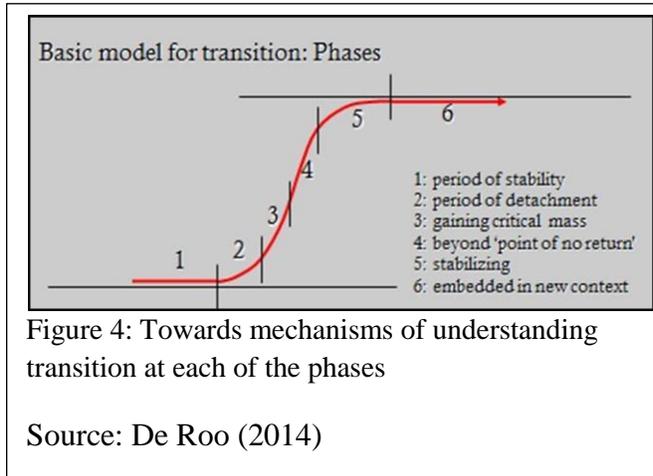
Source: De Roo (2014)

This can be seen in various aspects such as energy systems, autonomous transport, mobile and telecommunication, belief systems and demographics among others. The demographics of urban areas of especially developing countries are in a transition. It is projected that during the period 2000-2024, the world’s total population would grow by 1.76 billion persons, with some 86% of this growth expected to take place in the cities and towns of developing countries (Montgomery, 2008). Furthermore, the population projections are that by the year 2030, over half of the African population will be living in urban areas. This represents non-linear change over a period of time and carriers of coevolving CASs. Also in terms of energy, there has been a transition from the use of wood (charcoal) to liquefied petroleum gas (LPG) in some areas in Ghana.

Systems in transition go through periods of stability and robustness; these systems go through ‘processes of structural change from one level of relative stability to another,

representing the various stages of development affecting the system as a whole' (Rauws & de Roo, 2011). Transition processes are not deterministic and there are variances in the scale and the period in which it occurs (Rotmans et al., 2001). Urban areas go through transition processes and during this period, there are always possible trajectories of development, whose direction and scale can be influenced by top-down policy approach but cannot be controlled entirely.

### *Phases of transition*



Rotmans et al. (2001) has distinguished four different transition phases between the old and new level of stability.

*Predevelopment (1)* phase of dynamic equilibrium where the status quo does not visibly change. Under this phase, the autonomous processes (Rauws & de Roo, 2011) begin to emerge and yet have no impact at the systemic level

*Take-off (2)* phase where the process of change gets under way because the state of the system begins to shift. According to Rauws and de Roo (2011), under this phase, the 'autonomous processes reinforce each other and together cause the system to be thrown off balance', this period can also be called the period of detachment

*Breakthrough (3)* phase where visible structural changes take place through an accumulation of socio-cultural, economic, ecological and institutional changes that react to each other. The changes at this stage gain critical mass and reach point of no return. These changes become irreversible.

*Stabilisation (4)* phase where the speed of change decreases and a new dynamic equilibrium is reached.

Understanding the various phases of transition in urban areas is fundamental in terms of knowing what planning approach or rationality to apply at each period. This is critical because urban areas or cities are not stable and fixed, they are dynamic and change their structure and function with time.

## **Determinants of transition in urban areas (push and pull factors)**

The concept of transition is spurred by several factors herein referred to as push and pull factors. Understanding these factors is pertinent in designing adaptive strategies for urban areas in transition. Balducci et al. (2011b) identifies three factors that influence transition of urban areas. *Movement*. This refers to the growth in the flow of persons, goods, information and services which causes dislocation of the status quo in terms of social and spatial forms. This is inherent in the breakthrough in the automobile industry which acts as a catalyst for sprawl in cities. In such instances, neighbourhoods lose their identity as living environment for residents as these areas begin to experience change in function, typically becoming mixed use zones and commercial hubs. This is referred to as a pushing the system out of its old setting and a dislocation of its function due to internal mismatches (Frantzeskaki & de Haan, 2009: Cited in Rauws and De Roo, 2011). At the macro level this can arise as a result of *globalisation*-allowing international networking.

*Fragmentation*. This is caused by mobility in the urban areas resulting in dispersal of structures. This phenomenon can be attributed to ‘push’ factors like changing socioeconomic conditions, and increasing urbanisation which causes an urban area to be detached from its old setting (Ichikawa et al, 2006). Fragmentation occurs as demand for houses increase and when the city centre is all built-up, citizens are compelled to move to the peripheral districts. This phenomenon is referred to as peri-urbanisation (Rauws and de Roo, 2011).

*Construction of new communities*. This results as some ‘pull’ factors which affect and cause the system to move towards a strong and new context. New webs of relations are created and stability is achieved. An example is the awareness of the need to protect the environment which results in generating a pull towards a new stability between urbanisation and open space (Ichikawa et al., 2006). Urban areas under this phase can thus be controlled by blue print plans and the benefits of providing certainty for investors can be achieved.

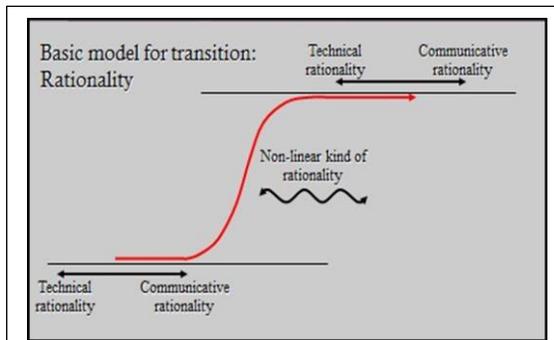


Figure 5: Basic model of transition; rationality

Source: De Roo (2014)

Understanding transition (non-linearity) leads to an appreciation that urban areas in transition can no longer be approached using familiar planning rationales that is technical and communicative. It will require a shift in planning style (Albrechts, 2004) which will be to adapt strategic approaches at the local level (Vancouver Declaration, 2006).

It also means embracing uncertainty and planning based on a non-linear kind of rationality.

This according to de Roo (2010) means planners should act as ‘mediators’ and ‘advocates’ in the planning process and guiding the ‘becoming’. This will require that in most cases, a shift from top-down interventions to self-regulation in urban areas would be a tenable approach.

## 2.6 Certainty and flexibility in spatial planning

According to Alfasi (2006), regulatory approach to planning assumes land-use statutory planning as both comprehensive long-term planning and specific planning applications. This type of planning is common in the United States (US). In the state of Florida, an act known as Growth Management Act (GMA) has been passed which gives legal powers to state, regional and local governments to enforce land use plans (Evers et al, 2000). This type of approach appeals to investors because it gives them the certainty they desire whereas inhabitants and property owners take solace in its ability to protect their interests (Balducci et al, 2011b; Booth, 1995). Comprehensive long term plans and regulation are based on an assumption that the government knows what is good for the masses (de Roo and Porter, 2007) and the planner is seen as a helmsman steering affairs (Allmendinger, 2009).

There are growing skeptics (Alfasi, 2006; Alfasi, 2004; de Roo, 2010; de Roo & Porter, 2007; Rauws et al., 2014) regarding straightforward understanding of urban areas which is reflected in comprehensive long term and statutory plans. De Roo (2010) argues that this is a representation of reality that cannot be in most circumstances due to change and progress in urban areas. Similarly, Alfasi (2006) argues that hierarchical long-term planning systems are

intrinsically problematic and their weaknesses are easily exposed in crisis situations. The point here is these plans are unable to respond to changes in context, they are often rigid (Balducci et al., 2011a; Rauws et al., 2014) and obsolete because they fail to match the inevitable need for local discretion and innovation (Alfasi, 2004). The reality however is the majority of planning in developing countries especially Ghana is still based on this worldview (Oduro et al., 2014).

The argument here is not to dismiss certainty as irrelevant in contemporary planning discourse, far be it so because there is still a knowable reality (de Roo, 2010), however, the majority of planning issues can be regarded as wicked (Rittel, 1972) meaning there are no definite solutions. Using linear projections, extrapolations and long term plans would be unsuitable in terms of matching the reality of development.

This challenges planners to find ways by which plans could be designed with the certainty they can offer while being flexible so as to respond to contextual interference. As acknowledged by Alfasi (2006), introducing elasticity to regulatory planning systems is a daunting task. Nevertheless, several authors have provided ways by which plans can be designed to be flexible. De Roo (2010) introduces non-linear rationality as the way forward; it is an acceptance of uncertainty as part of the structures necessary for development and progress in society. This means there should always be a number of strategic options to choose from during the planning process. Rauws et al. (2014) concludes that from a non-linear perspective, spatial plans are part of the configurations necessary to aid self-organisation, and if planned with certain principles in mind, can play a vital role in supporting autonomous spatial developments. In United States of America (USA), several strategies have been adopted to create flexible plans, these include 'floating zones' which provide zoning regulations for a certain use but do not show exact location on the land-use map; 'planned unit development' which allows for a wide range of uses in a specific area but does not specify the form of development; and 'special district' zoning which obliges the involvement of residents during planning of such areas (Booth, 1995). These strategies are laudable, however, if there is no element of robustness through command and control, there could emerge some undesirable urban configuration like proliferation of slums, particularly in developing and poor countries. Turning to CASs perspective of urban areas can provide options.

## 2.7 Complex Adaptive Systems and Planning Approach

The theory of complexity and complex adaptive systems have gained much recognition in the biological and physical sciences however when it comes to social sciences, particularly planning it is thought to be at the infancy stage (Rauws et al., 2014). There are however considerable number of writings regarding cities as complex adaptive systems and what implications it has for planning (see Alfasi & Portugali, 2007; de Roo, 2010; Rauws et al., 2014). Complex adaptive system perception of cities means their planning and governance can no longer be approached based sole on the technical or communicative rational. Cities seen in this regard cannot be regulated by formal top-down planning alone (Alfasi & Portugali, 2007). This means, these functional plans should be complimented by unplanned processes of development for example, self-organisation. This means the ‘city is always under construction but it is never finished or completed as it responds primarily to current needs and opportunities in a *just-in-time* manner’ (Alfasi, 2004) and such situations require *just-in-time* planning approach.

Similarly, de Roo (2010) argues that the role of planners in CASs should be that of ‘mediators’, ‘advocates’ and ‘guides’ for the various actors in the planning process to optimize their interest. This entails shifting from direct control to self-regulation. The work of the planner becomes a trend watcher and transition manager. Also, Albrechts (2004) in his paper ‘Strategic (spatial) planning re-examined’ argued that the solution to complex problems depend on the ability to combine the creation of strategic visions with short-term actions. This means planners will have to always make sense of what is happening currently and plan accordingly and this leads to a conclusion that plans will constantly be reinvented. Finally Rauws et al. (2014), proposes four approaches; the adoption of *independent smaller scale plans*, *incremental development strategies*, introducing *carrying structures* in development plans and finally defining *loose rules* to guide future development paths and embrace uncertainty.

### 2.7.1 Placing CASs on the decision making model

De Roo (2003) has proposed a model whereby combination of different governance strategies can be applied to a planning issue depending on its nature of complexity (figure 6). De Roo’s governance framework however is based on static complexity. This relates to issues that are fixed and frozen and can be predicted. This allows for the adoption of either technical or

communicative rational approach in dealing with such planning issues. While de Roo's framework is relevant for guiding decisions related to static complexity, it does not account for CASs, which can change in fundamental structure and function for example urban development changes with time. Socio-economic, cultural and environmental issues change with time and these influence urban development. Complex and dynamic issues continue to evolve, these issues change with time and so a modification is made to de Roo's framework as seen also in figure 6 which recognises the 'becoming' of planning issues. In the modified framework, attention is given to time and non-linear development.

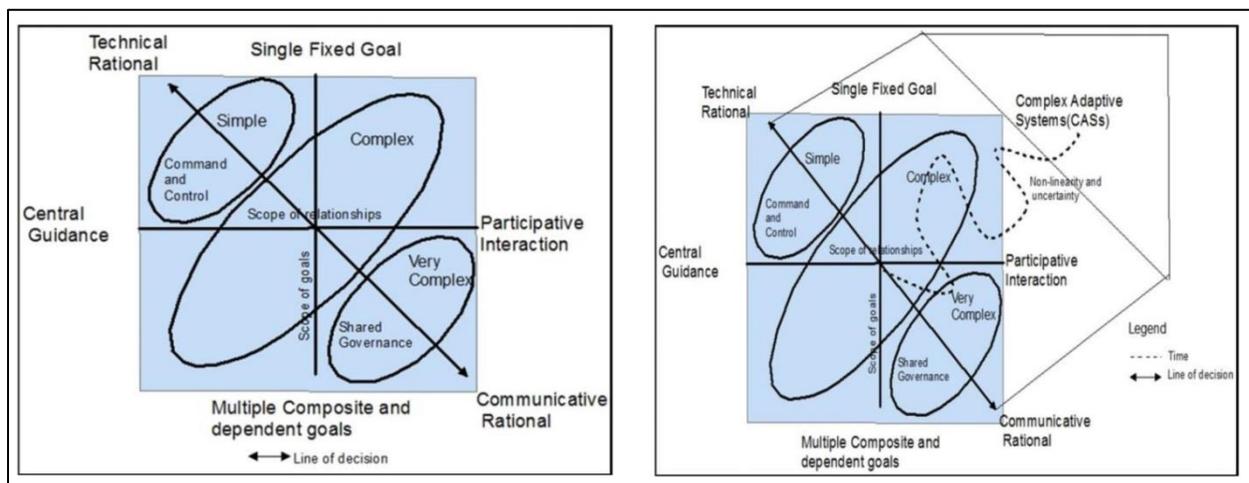


Figure 6: A framework for planning oriented action, in which the relationship between planning goals and interaction is based on complexity

Base on de Roo, 2003, and author's construct 2015

In the model, a distinction is made between structure and function as well between simple fixed goals and multiple composite and dependent goals. According to de Roo (2003), the figure represents a relationship between goal-oriented, institution-oriented and decision-oriented planning action that incorporates complexity as a criterion for decision making. The decision oriented is based on the degree of complexity of a planning issue which determines whether only the parts of the issue should be addressed or the context should also be considered. This will determine whether to adopt technical rational or communicative (institution-oriented) this is represented by the diagonal that extends from the upper-left quadrant to the lower-right quadrant (see Fig. 6).

The degree of complexity from simple to very complex issues is also depicted which also determines the relationship between simple and multiple goal(s). The degree of complexity will also determine the kind of governance strategy to adopt be it central guidance-command and control or participative interaction-shared governance. The nature of CASs is comparable to issues that are complex and do not cease to evolve. These issues can neither be addressed based solely on central guidance or participative interaction. Such issues are not simple, complex, very complex, nor fixed and frozen but dynamic. Technical and communicative rational are based on the here and now, the being and does not factor in, the time element, which is the becoming (de Roo, 2010). The nature of CASs is such that they change in the course of time through interaction with an external environment. Such change is non-linear and uncertain, which makes predictability limited, meaning, it is plausible to resort to self-organisation, self-regulation and transition management (Alfasi & Portugali, 2007; de Roo, 2010).

## 2.8 Conceptual framework

Conceptual framework according to Mugenda & Mugenda (1999) helps the researcher to clarify the definition of variables and visualise the processes that will lead to attaining the objectives of the research.

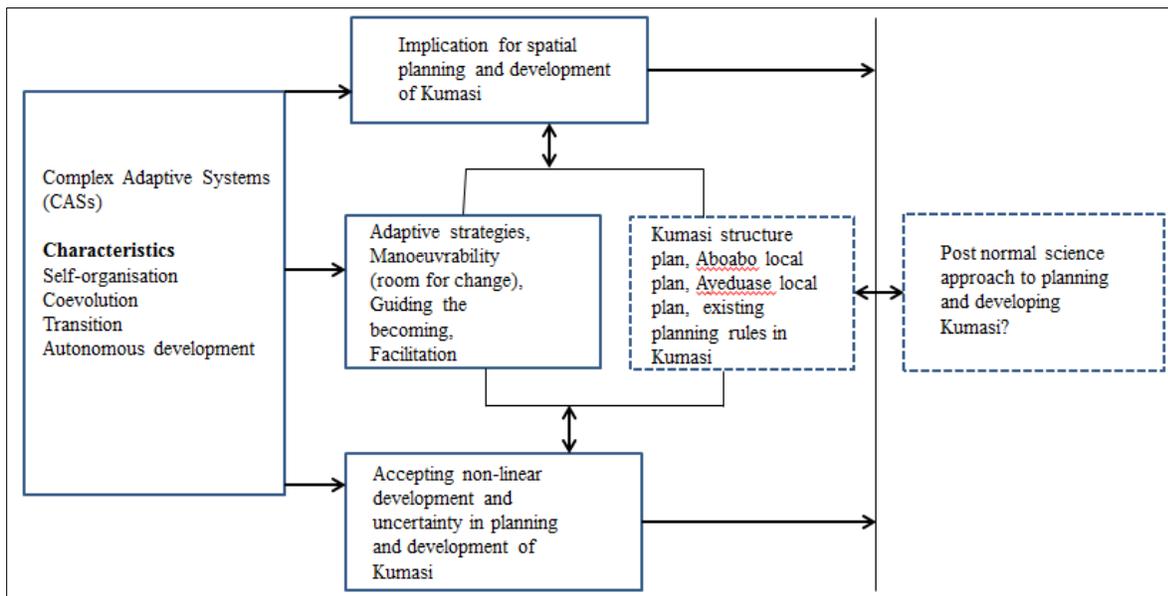


Figure 7: Conceptual framework

Source: Author's construct, 2015

Complexity perspective is the theoretical underpinning of this research that is urban areas as complex adaptive systems (CASs), made of numerous parts which are nested at different scales and levels and are unpredictable. These systems exhibit inherent characteristics such as transition, coevolution, non-linearity and self-organisation. Urban areas conceptualised as CAS means there are implications for spatial planning. The literature review reveals that spatial plans that provide room for change and are adaptive are capable of managing uncertainty and non-linear developments in urban areas. The role of the planner in uncertainty is to be a facilitator by monitoring development and intervening as and when necessary. The boxes with dash outline are the subject of direct interest and will be investigated in this research. The spatial plans of Kumasi as well as the institutional rules will be assessed to establish their effectiveness in supporting the transformation of Kumasi. The finding from such an assessment will be the basis for proposing a new approach to spatial planning and transformation of Kumasi.

## 2.9 Summary

The literature revealed how planning theory has moved on, in search of new and better ways of approaching planning issues. Complexity is gaining much recognition in planning so do CASs. Urban areas from the literature are seen as CASs which means their development and transformation can no longer be approached by either the technical or communicative rational. These urban areas exhibit certain characteristics such as self-organisation, transition, and coevolution which have implications for urban planning and development. A model was proposed by de Roo (2003) for planning oriented action in which complexity was used as a criterion. Numerous solutions have also been suggested by several authors, which will be used as basis for the analysis of the spatial development policies of Kumasi.

## CHAPTER THREE

### BACKGROUND OF STUDY AREA: CONTEXTUAL SPATIAL DYNAMICS AND INSTITUTIONAL STRUCTURE OF KUMASI

#### 3.1 Introduction

This chapter is about the planning and transformation of Kumasi. It looks at the interplay between formal planning and the processes of self-organisation, transition and emergence that are eminent in Kumasi. This leads to a situation whereby the plans are often rendered outdated and unable to keep pace with what happens in reality in terms of physical development in Kumasi. Kumasi is a rapidly urbanising city and this is reflected in the use of land. The changing skyline of the inner city as a consequence of contemporary high-rise structures replacing old structures and the conversion of agricultural lands at the peripheries to residential and commercial uses are ramifications of increasing urbanisation of Kumasi. These developments are non-linear partly due to the individual actors/developers learning and acting as a result of feedback and feed-forward through interaction with others and also from an external environment (globalisation). This often leads to coevolution and emergence, with ramifications, which are increasingly exposing the weaknesses of the current spatial planning practice in Kumasi, which is traditional and regulatory based (see Alfasi, 2006)

#### 3.2 Location and physical characteristics

The Kumasi Metropolitan Area (KMA) lies about 270km north of Accra, the national capital of Ghana (see figure 8). The strategic location of Kumasi makes it attractive for immigrants and merchants (see Adarkwa, 2011). As a result of this, the population has almost doubled in a decade (figure 11). Kumasi's present population is about 2 million, with a land area of about 254sq/km, approximately 10km in radius (KMA, 2014). Kumasi was planned in the year 1945 on the concept of the 'Garden City' model of Ebenezer Howard (Mensah, 2014). The concept of the 'Garden City' revolved around a city with a population of between 30000 and 32000 with a land size of 1000 to 6000 acres (Clark, 2003). A 'Garden City' should also blend the built environment with the natural environment by reserving areas for open spaces and parks. Kumasi in the late 1950's and early 1960's used to be called the 'Garden City' of West Africa.

Several factors however, constrained the development of Kumasi as a garden city. Due to urban sprawl, the natural environment has been altered and the greenery that compliments Kumasi as a garden city has been depleted. This sprawl is spurred by the rise in auto-mobility

and car ownership in Kumasi. The population growth on the other hand is due to in-migration and improved health care which brought about reduction in mortality rate. The sprawl and population growth means that both the ideal land size of 1000 to 6000 acres and population of 32000 which underpinned the ‘Garden City’ as envisaged by Ebenezer Howard have been surpassed substantially. Much development has taken place that did not conform to the plan of Kumasi, for example development activities have encroached green reserves. Though it might be true to say that poor development control in Kumasi, due to weak institutional capacity (Boamah et al., 2012) and failure to make provision for informal activities in land use plans (Boapeah, 2001) were some of the reasons why the visions of the ‘Garden City’ Plan could not be realised. It is important to realise that the ideal ‘Garden City’ concept lost it from reality, which is something beyond the control of the planning department.

The ‘Garden City’ concept according to Clark (2003) is based somewhat on ‘Utopian’ ideas and does not at all times, match dynamic reality in terms of development. What is currently happening in Kumasi is a glaring reflection of the limitations of taking a straight forward stance on how plans are conceived and operationalised in urban areas. Despite Kumasi being planned on a wonderful concept, reality took a different course. Kumasi cannot be regarded as a ‘Garden City’ anymore owing to the mess in terms of development that is currently on-going. These developments are part of the complexities in urban areas which cannot be managed by closing our eyes to non-linearity and uncertainty.

With reference to Bollinger et al. (2014), ‘we cannot fully know the path before us until we have walked it. The best we can do is to make sure we have the tools we might need along the way’. Reactive and corrective measures such as demolition of unauthorised structures and strict development control as a way of guiding urban transformation seem inadequate (Alfasi & Portugali, 2007). This leads to the question: what are the appropriate tools for guiding urban transformation? Could moving from controlling of space to influencing autonomous developing of space be the way forward?

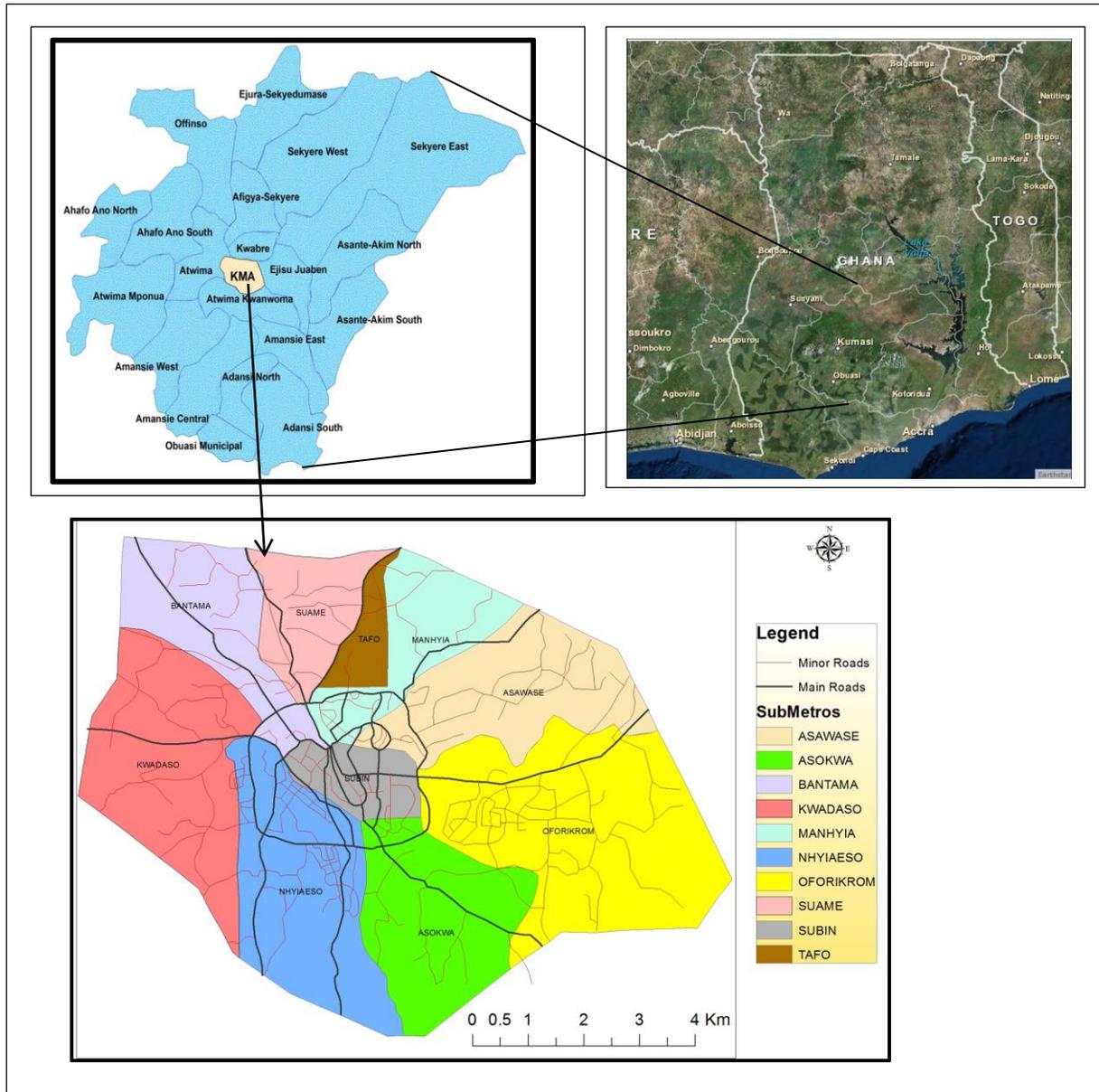


Figure 8: Location of Kumasi in National and Regional Context

### 3.3 Historical development/transformation

**K**umasi, being the capital of the Ashanti Region of Ghana has undergone several political, cultural, physical and demographic transitions over the last hundred years (Amoako & Koboe, 2011). These together have shaped the present structure and function of the city. Before the twentieth century, the major economic activity was farming and gold trading. The population as at that time is estimated at 1000-15,000 people with a built up area of about two square kilometres (Abloh, 1972: Cited in Amoako & Koboe, 2011). Kumasi was however subjected to an unprecedented pace of social and economic transformation during the first two decades of the

twentieth century. This was partly attributable to the takeover of Kumasi by the British resulting in a significant change in the city's architectural landscape and its cultural and religious infrastructure (Korboe & Tipple, 1995: Cited in Amoako & Koboe, 2011). Under this period, the transformation of Kumasi was dictated by political interference that is the British rule. The British introduced spatial planning as a means to ensure proper hygiene and also for exploitative purposes (Fuseini & Kemp, 2015; Quarcoopome, 1993).

The religion and culture of the people in Kumasi were also influenced by the British who introduced formal education and Christianity. Present major landmarks in Kumasi such as St. Peter's Basilica Catholic Cathedral, Wesley Methodist Cathedral, Kumasi fort and museum are reflections of the influence of politics on the cultural and architectural landscape of Kumasi. The transformation of Kumasi has been constrained and enabled by several factors. This can be characterised in figure 9. The figure shows the various factors and conditions that constrained and enabled the transformation of Kumasi since the year 1900, when Kumasi came in contact with the British. These factors are contextual inferring and unpredictable. They have determined the configuration of development in Kumasi throughout the various years. For example the houses in Kumasi before the year 1900 were built with mud and roofed with thatch. These houses were also built with no requirement for planning standards and sanitation, resulting in the outbreak of cholera.

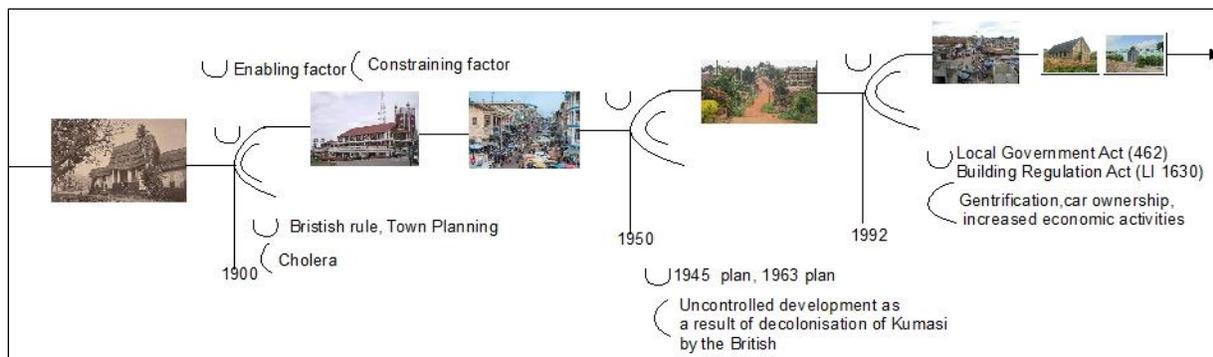


Figure 9: Bifurcation of Kumasi's transformation

Source: Author's construct, 2015

Cholera and poor sanitary conditions triggered the enforcement of Town Planning standards by the British and this changed the old landscape of Kumasi. The opening of a railway line in 1903, which connected Kumasi to the southern parts of Ghana, also brought about

increased trade and economic activities (see Koboe & Tipple, 1995). Again the presence of the British and the construction of the Kumasi fort guaranteed security and increased in-migration. These together enabled the construction of commercial structures at the centre of Kumasi by merchants. This was to match the present function of Kumasi as a new commercial hub. In short, a new pattern of development emerged after 1900 which was different from the old. The actors together created a pattern that was propelled by the British rule, Town planning and flourishing economic activities in Kumasi.

Following the return of land to the chiefs of Kumasi by the British, individuals' own specification and need deterred the development of Kumasi in-line with the official plan. The implication was that, though an official plan was drawn to guide the development of Kumasi at the time, development was based on individuals own initiatives (see Korboe & Tipple, 1995). Consequently, the configurations in the city that emerged at the time could be described as chaotic, representing both positive and negative outcomes. The positive outcomes included redevelopment of the city center and increased commercial activities while the negative outcomes among others include the proliferation of slums and urban dispersal. While a new plan was designed in 1963 to guide the development of Kumasi, as explained earlier, changes in the demographic dynamics and economic activities are increasingly determining the configuration of development in Kumasi which are in most cases hardly envisaged by the plan. These developments are usually non-linear. The 1945, 1963 and all other plans of Kumasi therefore became limited in guiding the development and transformation of Kumasi. Figure 10 shows the 1963 structure plan of Kumasi.

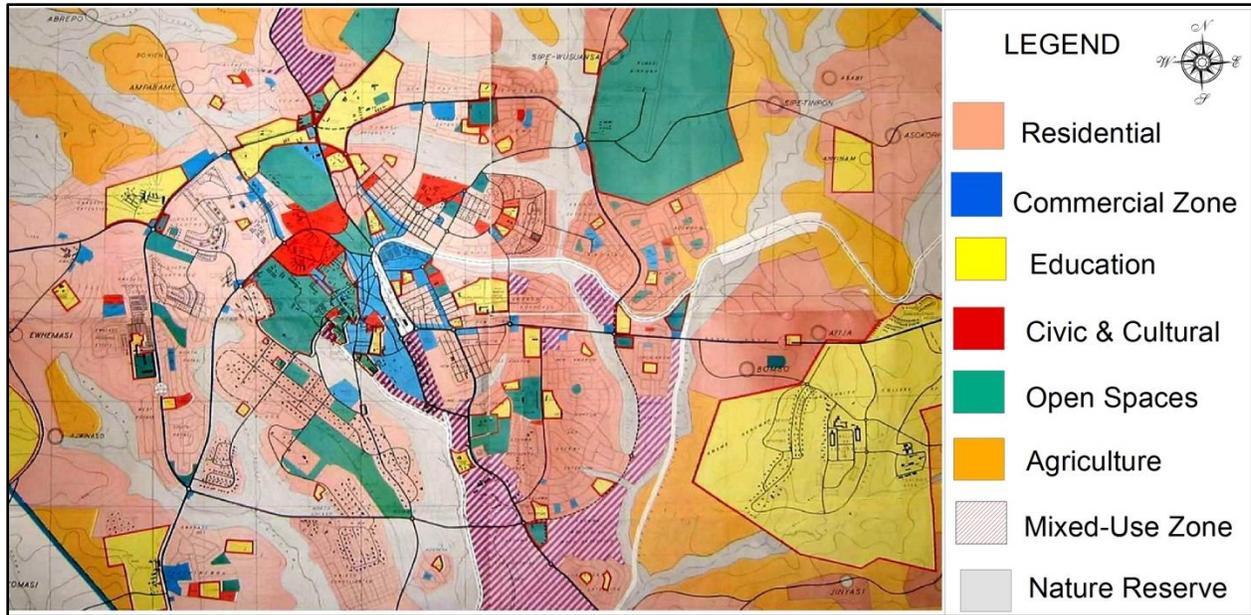


Figure 10: Structure plan of Kumasi, 1963

Source: MEST, TCPD and JICA, 2012

Figure 10 was used in controlling land use and development in Kumasi. It was also a tool to provide certainty for developers and protect public interest by showing distinct land uses, areas permissible for development, areas not permissible for development and nature reserves. This plan however became limited in guiding the development of Kumasi. This is because it was designed based on the situations as they were and not how they will become. As a result, the period between 1963 and 1992 saw a lot of inconsistency in development vis-à-vis the goals of the plan. This is confirmed by Amoako and Koboe (2011), who observed that there are a lot of developments that did not conform to the plan. Some of the reasons for this were partly due to the influx of migrants and increasing population of Kumasi with dire need for housing structures. It is estimated that about 70% of the employment in Kumasi consists of petty traders and informal businesses and yet their space requirements are usually ignored in land use plans (Afrane & Ahiable, 2011) resulting in the use of public open spaces. Much of the nature reserve zone has also been developed as residential areas even though these areas were earmarked as unsuitable for building and were to be protected from encroachment according to the plan.

The forgoing is giving us a clue to the fact that socio-economic, cultural, institutional, political, and physical factors are not static, frozen and in an equilibrium state. These factors change with time, they are dynamic and the current plans -designed on the basis of the here and

now, the being without recourse to the ‘becoming’ are therefore limited. The current plans do not provide room for maneuverability whenever there are contextual changes. It is therefore important or an interesting proposal to understand Kumasi as a complex adaptive system and more importantly, focussing on the ‘becoming’ aspect of it.

### **3.4 Kumasi as a Complex Adaptive System (CAS)-The ‘becoming’ perspective**

**K**umasi has experienced transition in its demography since its formation. Official data shows that between 1984 and 2010, the population of Kumasi increased about 400 percent (Mensah, 2014). Much of this growth is attributed to in-migration (Amoako & Koboe, 2011) and this is a major contributory factor to the transformation of Kumasi. The proliferation of unauthorised structures in the city and urban sprawl could be attributed to this astronomical population growth. The city’s structure is continuously changing as these in-migrants try to create a possible fit within the city through self-organisation. Informal settlements then begin to emerge as a result of the spontaneous building of houses to meet the growing shelter needs. As shown in figure 9, the promulgation of the Buildings Regulation Act (LI 1630) after the year 1992, which placed restrictions on the type of building materials led to a symmetry break: a change in conditions due to the LI 1630 preventing developers from building with their own materials and thus reducing their ability to construct new homes. This brought about adjusting behaviour which is evident in the illegal extension of houses in certain neighbourhoods (eg Fante Newtown, Aboabo and Ayeduase) of Kumasi because the actors could not afford to build new homes as a result of high cost of the required building materials. The effect of this adjusting behaviour is the creation of new neighbourhoods that are difficult to foresee in advance. This is uncertainty about how the different actors in an urban area will act in response to changes in conditions for example implementing a new plan or legislation.

It is estimated that in the year 2003, about over 80 percent of the new buildings being put up in Kumasi were unauthorised (Freiku, 2003: Cited in Mensah et al., 2011). This is in spite of the fact that there was a formal plan which supposed to guide development. As mentioned earlier, there is always uncertainty about how independent actors (developers, residents) in an urban system will act in response to changing conditions (eg socio-economic, institutional and environmental) even when there is a formal plan. The ‘becoming’ aspect of urban areas (how these areas will coevolve) in terms of structure and function, in most cases remains ‘undefined’. (see Zhang et al. 2015) and non-linear. This partly could be the reason why areas zoned as nature

reserves in Kumasi's structure plan (figure 10) and which were supposed to remain undeveloped were developed as residential and commercial uses. This reinforces the claim that urban areas, in most cases become messy and plans based on a linear world struggle to cope with their transformation (see Alfasi & Portugali, 2007).

Although, these informal settlements are unauthorised, efforts by the city authorities to regulate their development are commonly 'reactive' in response to what has materialised. The more they demolish these informal settlements, the more new ones emerge (Mensah et al, 2013). It is therefore fundamental to understand that a self-organisation, which results in informal settlements (spontaneous emerging patterns), is inherently part of Kumasi and should lead to an understanding that these informal settlements did not develop out of nothing and are also capable of providing the necessary conditions needed to sustain themselves. This means that current spatial planning in the city that is based sole on command and control by the state as a tool for transforming Kumasi is limited. Instead of using strategies aimed at controlling space such as strict zoning regulations, could strategies aimed at enhancing autonomous processes (self-organisation) be a realistic approach in supporting the transformation of Kumasi? The literature on the transformation of Kumasi (eg Amoako & Koboe, 2011; Koboe & Tipple, 1995) suggests that the development of Kumasi over the years is non-linear and dynamic. This non-linearity is in the form of transition, emergence and self-organization. These features are not mutually exclusive and cannot be managed solely by plans based on the 'Newtonian' worldview.

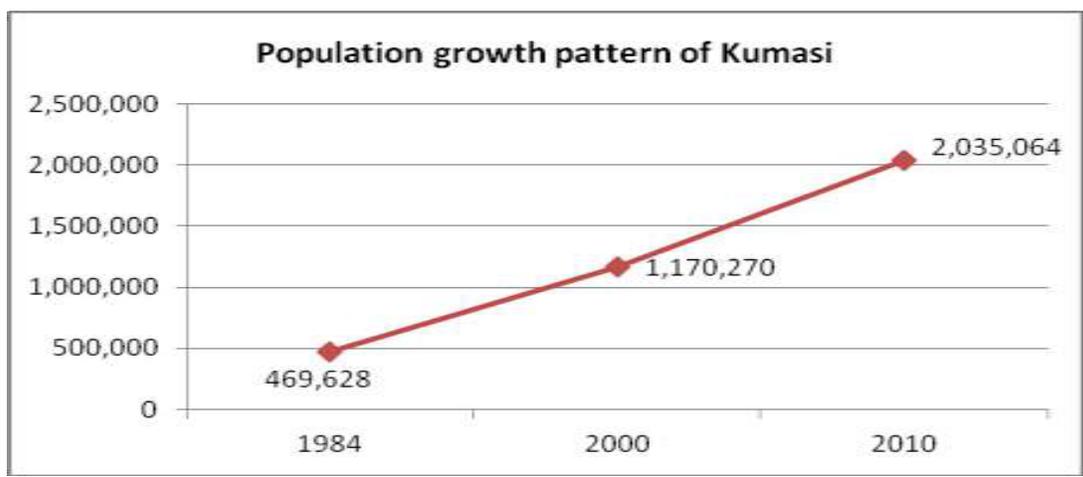


Figure 11: Population growth of Kumasi

Source: Mensah, 2014

Furthermore, evidence of transition in Kumasi can also be seen in the housing type and structures. The core of the city contains compound houses<sup>4</sup>. The earlier houses were single storey compound houses and in time, these were redeveloped into multiple storey and thus enabling the ground floor to be rented out for commercial purposes. This observation is supported by Adarkwa and Oppong (2005) who found that the CBD of Kumasi (Adum and Fante Newtown) is undergoing gentrification by way of a complete construction of new structures. What is happening in the peri-urban areas is a deviation from the compound housing structure which characterises the core areas of Kumasi. The change in family structure from extended<sup>5</sup> to nuclear<sup>6</sup> is stimulating the construction of detached houses which are often gated. There has also been a change in the land uses especially from residential to commercial and from agricultural to residential as invasion and succession is evident (Hammond, 2011; Adarkwa & Oppong, 2005). The invasion and succession is driven by the scarcity and high prices of land in the CBD (Hammond, 2011), meaning the available land would always be put to the ‘highest and best use’. In effect, the structure and function (transformation) of Kumasi is continuously changing like every other CAS. While the reality is that Kumasi’s transformation is dynamic and dependent on conditions, the institutional framework within which spatial planning operates is static and unyielding to this dynamic reality.

### **3.5 How is the Spatial Planning Framework of Ghana supporting or constraining the transformation of Kumasi?**

**S**patial Planning functions in Ghana are currently performed at the national, regional and district levels. The Town and Country Planning Department (TCPD) is a technical department of the Ministry of Environment, Science and Technology (MEST) and is the responsible body for spatial and human settlement planning in Ghana. Spatial Planning is currently active at the district level with the preparation, approval and control of Planning Schemes and Sector Plans. Structure Plans exist for a few cities; however, these are not up-to-date. This leads to a conclusion that the dynamism in urban areas coupled with uncertainty about the ‘becoming’ means that current planning in Kumasi that relies on the here and now and linear extrapolation as basis for planning is not enough. This explains why plans are not able to keep pace with

---

<sup>4</sup> The compound house is a kind of family house, as it is found across West Africa. It is normally rectangular in shape, has rooms at three sides and shared facilities such as a kitchen, bathroom(s) and storage at the fourth side.

<sup>5</sup> Refers to a household of so many relatives eg parents, siblings, uncles, aunts, nephews, grandparents

<sup>6</sup> Nuclear family refers to a household that consists of the man, woman and children only as commonly found in the Western countries.

urbanisation and development in Ghana thereby rendering these plans out-dated before their implementation begins. The legal framework in which spatial planning operates in Ghana, is partly the reason for this phenomenon. These regulations tend to be rigid and inflexible. Some of these regulations were enacted as at the time Ghana was a British colony (between the year 1900 and 1957) and have since seen no revision. The problem with these regulations is that: they are more of command and control and do not promote participation especially at the local level.

Spatial planning in Ghana is mandated by the following legislations:

- ✓ *The Local Government Act, 462, 1993;*
- ✓ *The National Development Planning Commission Act, 1994;*
- ✓ *The National Development Planning (Systems) Act, 1994;*
- ✓ *The Town and Country Planning Ordinance, 1945 (CAP 84)*

The Metropolitan, Municipal and district Assemblies (MMDA's) which carry out spatial planning at the district level and local level are mandated without prejudice to:

“prohibit, abate, remove, pull down or alter so as to bring into conformity with the approved plan, a physical development which does not conform to the approved plan, or the abatement, removal, demolition or alteration of which is necessary for the implementation of an approved plan” (Local Government Act 462, 1993, section 53).

This provision is based on *The Town and Country Planning Ordinance, 1945 (CAP 84)* of the British Planning System. This relates to ‘Newtonian’ principles which incorrectly assume a world of knowable reality. It is a representation of reality that is supposed to be linear and straight forward in all situations and this according to de Roo (2010), cannot be. This is because issues like socio-economic, culture, taste and preferences change with time. These issues by and large have spatial manifestations and therefore influence and determine the overall configuration of development in Kumasi. In effect, the Local Government Act (462) supposes to be a regulatory framework for guiding spatial development in Kumasi. However, regulatory planning in itself is problematic as it is assumed the government is acting under the guise of public interest (de Roo & Porter, 2007) and the planner is regarded as a helmsman steering affairs (Allmendinger, 2009). While others may argue that the haphazard development in Ghanaian cities is the culmination of poor enforcement of development control due to lack of adequate physical and human resources (Boamah et al., 2012), it is clear that even if the state is given all the power and resources, it would still be unable to control development in a particular pattern (Geddes 1968: Quoted in Healey, 2007). This leads to the appreciation that regulatory planning

is not an appropriate tool for guiding urban areas in transition as they are often rigid and does not respond to changes in the context (Rauws et al., 2014)

In an attempt to rectify this situation, the TCPD has prepared a Land Use and Spatial Planning Bill, which is before the Parliament of Ghana to be passed into law to replace the old laws on spatial planning. This proposed spatial planning system is based on a three-tier system, involving the preparation of Spatial Development Frameworks (SDFs), Structure Plans (SPs) and Local Plans (LPs). It is a way of encouraging greater participation and a bottom-up approach to planning. Figure 12 shows the Proposed Spatial Planning Framework

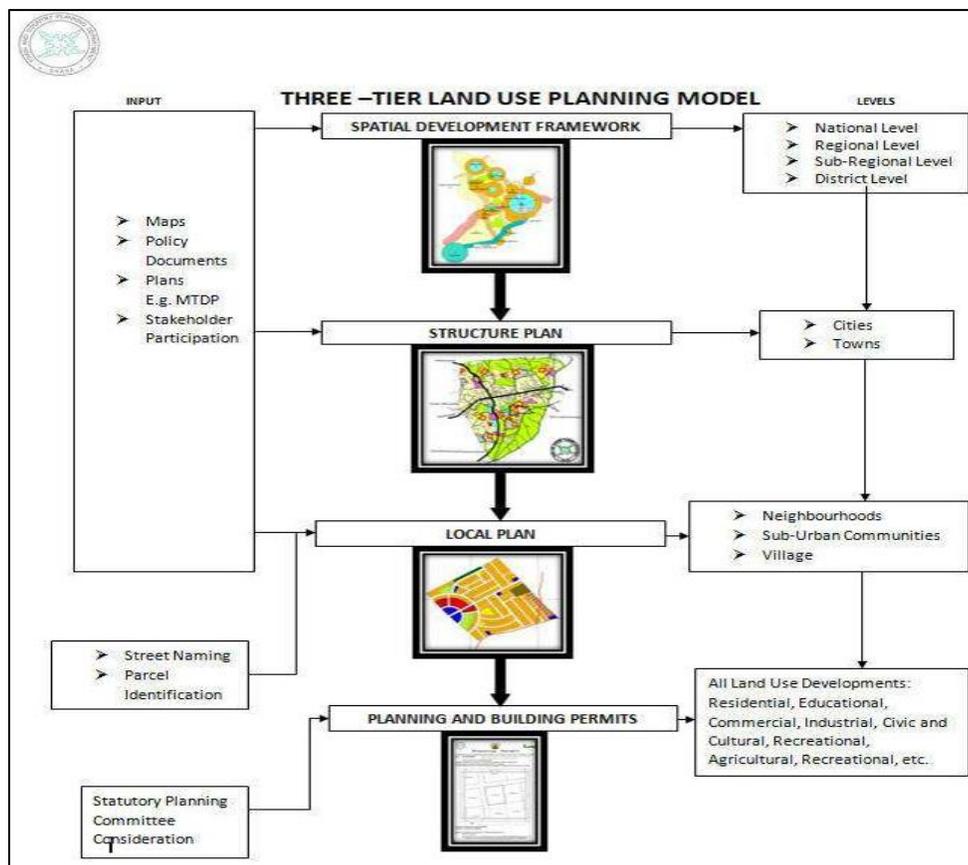


Figure 12: Proposed spatial planning system

Source: MEST, TCPD and JICA, 2012

The new spatial planning system is expected to ensure harmonisation of plans at the National, Regional, District and Local levels and to deal with the current short coming of the old system of spatial planning which fails to encourage greater stakeholder participation, particularly at the local level and therefore unable to support urban transformation. As shown in figure 12, with the

new Spatial Planning Framework, structure plans and local plans at the district and neighbourhood level respectively would normally originate from the national and regional level Spatial Development Frameworks. A Spatial Development Framework is an indicative plan showing visions of future development over a 15 to 20 year period. The new Spatial Planning Framework is about an integrated, decentralised and participatory approach to spatial planning in Ghana. The old spatial planning system overly focuses on parcel subdivisions and zoning regulations, with little attention to livelihoods and socio-economic activities (see Fuseini & Kemp, 2015). With little attention given to socio-economic activities in spatial plans in Ghana, there is always uncertainty about how the residents would respond in an attempt to survive. This situation brings among other things self-organisation and emergence which in most cases thwart the realisation of predetermined goals of plans. However, the new planning framework is expected to encourage greater participation in the planning process and this might perhaps help in integrating the needs and aspirations of the residents and might go a long way to support the development of Kumasi.

### 3.6 Summary

In this chapter, it is seen how Kumasi has transformed over the years from being an agrarian economy to purely commercial and how this has affected the structure of Kumasi. Furthermore, there is an on-going transition in the neighbourhoods around the CBD of Kumasi from residential development to commercial complexes (Fante Newtown). The population of Kumasi has also increased steadily over the years with its attendant consequences such as overcrowding and emergence of informal settlements which together have altered the structure and fabric of Kumasi in a manner not envisaged by the original plan of Kumasi. These factors can be understood to be contextual interfering thus providing a unique challenge to formal plans. The challenge however, is how to design appropriate planning tools that would respond to these changes in the context by being adaptive. While this chapter, by and large, focused on Kumasi at the regional or metropolitan level, the next chapter is about the planning and transformation of two neighbourhoods at the local level. This chapter has therefore laid the foundation for reference and further analysis in the next chapter.

## CHAPTER FOUR

### EMPIRICAL ANALYSES OF PLANNING AND TRANSFORMATION IN KUMASI

#### 4.1 Introduction

The face of Ghanaian towns has changed since the initial contact with the colonialists (Adarkwa, 2012). Complex socio-economic, political and cultural factors have together fashioned the present configuration of Kumasi. Due to the reality that these factors are not static, frozen and in equilibrium, spatial planners in Kumasi increasingly struggle to cope with the ‘becoming’ side of these issues. They are more accustomed to planning based on the issues as they are and strive for minimum quality standards as contained in the planning regulations. When faced with uncertainties and messiness in urban areas, the only provision in the regulations is demolition. Conceptualising Kumasi as a complex adaptive system with characteristics such as self-organisation, transition and coevolution can offer alternatives and complement the existing robust standards. The previous chapter (three) shows how the structure plan of Kumasi has been unable to guide the transformation of Kumasi. This chapter therefore is about empirical analyses of spatial planning in Kumasi and the uncertainties that planners face in the design and actualisation of plans using cases of two suburbs.

#### 4.2 Tools for guiding urban transformation in Kumasi

The transformation of Kumasi is supposed to be guided by a structure plan (see figure 13) and local plans. A Structure Plan is a long term (ten to fifteen years) statutory framework used to guide the development or redevelopment of land. A local plan (5 years) defines the land uses for all parcels of land within the plan area or neighbourhood. The local plans are usually prepared based on the structure plan and are enforced through appropriate legislations. Any local plan is therefore expected to determine:

- a. The land coverage of any construction on a plot in the zone*
- b. The overall form of the construction*
- c. The height of the buildings if not prescribed in the Planning Standards for the particular Land Use*
- d. The materials used in the facing or construction of buildings on the land*
- e. The colour of any or all; the buildings, the doors, windows and roofs of the building constructed*
- f. Requirements to preserve existing trees*

- g. Requirements for the preservation of existing structures*
- h. Requirements for landscaping or tree planting*
- i. Sanitation requirements for all developments within a designated area.*
- j. Environmental protection requirements*
- k. Any other matters pertaining to the management of the development*

Deducing from the above, the role of local plans in Ghana is to provide guidelines for urban development and the process by which these guidelines ought to be implemented. The content of local plans in this instance becomes more important relating to issues such as ‘what land uses can be located’ and ‘where should these land uses be located’. Once a local plan is approved, it becomes legally binding and any development (structure and function) contrary the plan can be demolished by the planning authority. This situation makes local plans blue prints and limited in guiding the transformation of Kumasi. While it is proper to argue that such strict zoning regulations are required in certain cases (eg to prevent chaos of destruction), their widespread application in all cases in the development of Kumasi is problematic. Applying these strict regulations in the development of Kumasi could be related to ‘neo-positivism’ view, which sought to present one true world and an environment that can be fully controlled with development and progress certain (see de Roo, 2010). This is a representation of a reality that cannot be, due to the socio-economic and demographic trends in Kumasi. Evidence from the field work suggests development in Kumasi is far from certain; nonetheless, the institutional and regulatory framework is still not responding to this dynamic reality in Kumasi.

This department determines how physical development should proceed based on Zoning Ordinances (Planning Standards), National Building Regulations (LI 1630), National Urban Policy, Local Government Act (462) and Town and Country Planning (TCPD) Ordinance-CAP 84 (Kumasi Metropolitan Town Planning Officer, 13<sup>th</sup> April, 2015)

The Zoning Ordinances and Planning Standards in particular are used to control the configuration of development and other considerations that must be observed by those developing or using the land, at the discretion of the Metropolitan Assembly which is responsible for issuing building permits for developments, ensuring that development is carried out in accordance with the approved plans and taking action against those breaking the law. The

Metropolitan Assembly acts based on the powers derived from the Local Government (LG) Act (462) and the National Building Regulation (LI 1630). Some of the provisions are below:

No physical development shall be carried out in a district without prior approval in the form of written permit granted by the District Planning Authority [Acts 462 Sec. 49 (1)]

Any person, who allocates, transfers, sells or develops land for a use or purpose that is contrary to an approved development plan, settlement structure plan, action plan or programme commits an offence [Acts 462 Sec. 6 (12)]

A District Planning Authority may without prior notice effect or carry out instant prohibition, abatement, alteration, removal or demolition of any unauthorized development carried out or being carried out that encroaches or will encroach upon a community right of space, will interfere with the use of such spaces [Acts 462 Sec. 55]

These provisions are based on the premise that development in Kumasi is linear and the idea that certainty can be achieved within planning interventions. This can be termed as object-oriented planning in which it is assumed there is one true world thus allowing the efficiency of command and control governance approach. Taking this stance means that planners in Kumasi tend to overly focus on the entity or object of planning with less interest in the subjects. This worldview however, leads to lock-in situations and rigidity of plans. The reality is that socio-economic, physical, social and political conditions are continuously changing and are not static. The current provisions for regulating physical development in Kumasi can be traced back to the colonial era of planning (19<sup>th</sup> and early 20<sup>th</sup> century), from which period, the Town and Country Planning Ordinance, 1945 (CAP 84), which is the principal legal framework for spatial planning in Ghana was promulgated. Physical planning in Ghana at this era was introduced by the British in response to poor sanitation and hygiene conditions in major towns (Quarcoopome, 1993). There was thus, the need to ensure strict standards are complied with when it comes to permissible and prohibited land uses. For example, industrial zones were strictly prohibited in residential zones (see figure 13).

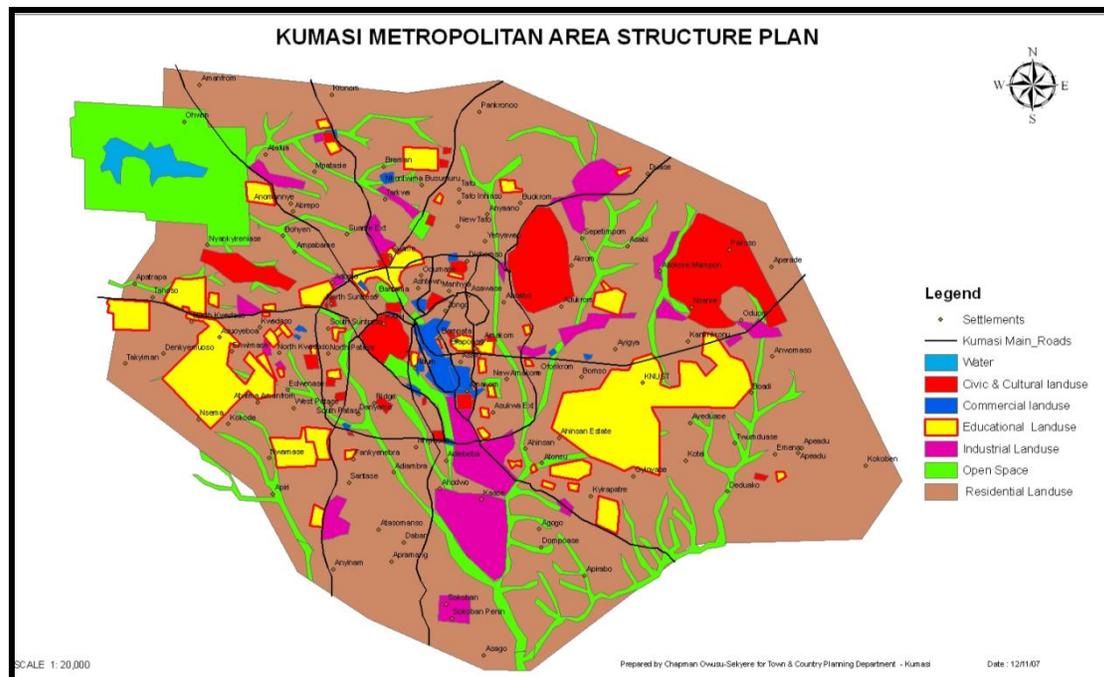


Figure 13: Present Structure of Kumasi

Source: KMA, 2010

Figure 13 shows the current structure plan of Kumasi with distinct land uses. The purple colour shows the industrial zones while the brown shows the residential. Residential and industrial land uses according to Ghana’s Town & Country Planning standards are not compatible and should not be mixed in terms of development of an area. However, the reality in Kumasi presently is that: there is a mixture of commercial and residential uses, industrial and residential land uses and some developments are non-conforming to approved plans (see figure 15). This is perhaps a new reality that cannot be managed based on the current institutional framework of planning in Kumasi which can be described as utopian in nature. There is a disconnect between what is contained in the plans and what happens in reality. Evidence to support this this claim is presented in section 4.3.

### 4.3 Urban transformation in Kumasi- the case and configuration of Aboabo and Ayeduase

#### Background of Aboabo

Aboabo is regarded as a slum community in the Kumasi Metropolis with conditions such as poor sanitation, large household sizes, poor provision of utility services, sub-standard buildings, congestion and unapproved extension of buildings (see Amoako & Cobbinah, 2011). These

characteristics are a sharp contradiction of the world envisaged by the planning system in Kumasi and the supporting legal instruments. In Aboabo, a number of physical developments are located in floodplains (figure 15), notwithstanding the fact that there is a local plan (see figure 14) that was supposed to guide these developments. These developments could be attributed to the high average household size of 6 persons in Aboabo compared with Kumasi metropolis' household size of 5 persons. The high average household size of Aboabo is resulting in spontaneous patterns (self-organisation) by the residents in an attempt to meet the pressing shelter need.

Furthermore, 85% of the working population in Aboabo, are engaged in activities such as hairdressing, dressmaking, food selling and hawking, among others (Amoako & Cobbinah, 2011). These are often referred to as informal activities. The informal sector continuous to receive less attention in land use plans and zoning regulation in Kumasi. This is because the current spatial planning framework does not encourage citizen participation. Ideally, spatial plans are supposed to be designed taking into consideration the needs of the local people, however, in practice, this usually is not the case as the interview with the Kumasi Metropolitan Planner reveals the Planning Department lacks adequate personnel and logistics to carryout comprehensive socio-economic survey of residents before planning. As a consequence plans are usually designed with less concern for the livelihood activities of the residents and the implication is the occupation of road reservations and areas supposed to be preserved according to the plan (figure 16). The residents do this because they try to create a best fit with the environment and this reinforces the claim that CASs do not just operate in an environment created for them initially, but can alter it to match their need or enable them to survive.

Figure 14 shows the local plan of Aboabo, which is supposed to guide the nature, type and density of development in Aboabo. It also shows the subdivision of plots and open spaces. In short, the local plan was supposed to make Aboabo safe, accessible and aesthetically pleasing through the alignment of roads and organisation of land uses. The marshy area in particular was therefore supposed to remain undeveloped because it is susceptible to flooding and is a health risk. During the field work, it was observed that a number of buildings have been constructed in this marshy area. An overlay of the land use plan and satellite imagery of Aboabo shows

buildings located in the marshy area (figure 15). The reason for this could partly be attributed to the scarcity of land in Aboabo, coupled with the high demand for housing.

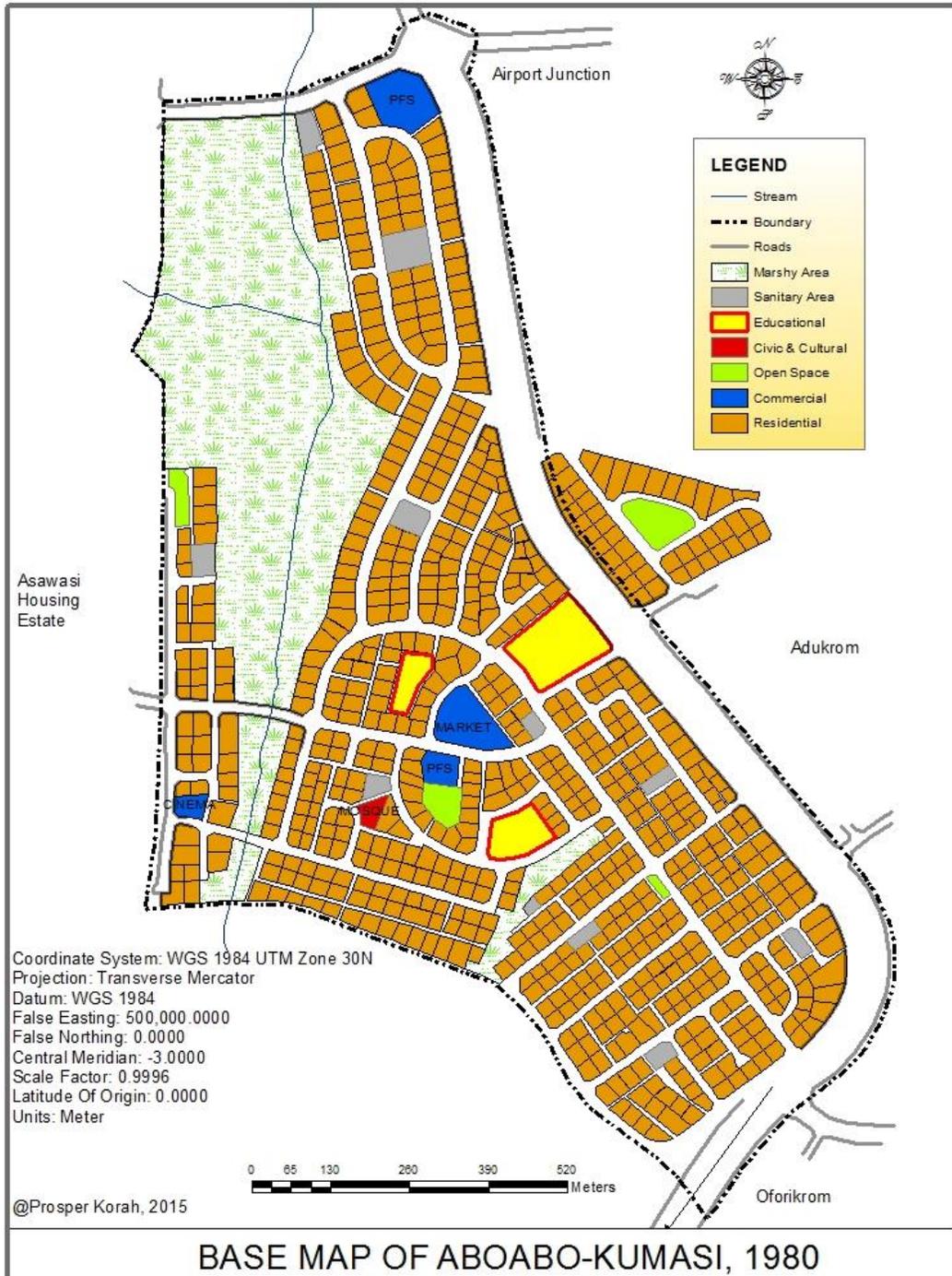


Figure 14: Local plan of Aboabo

Source: Based on field work, 2015

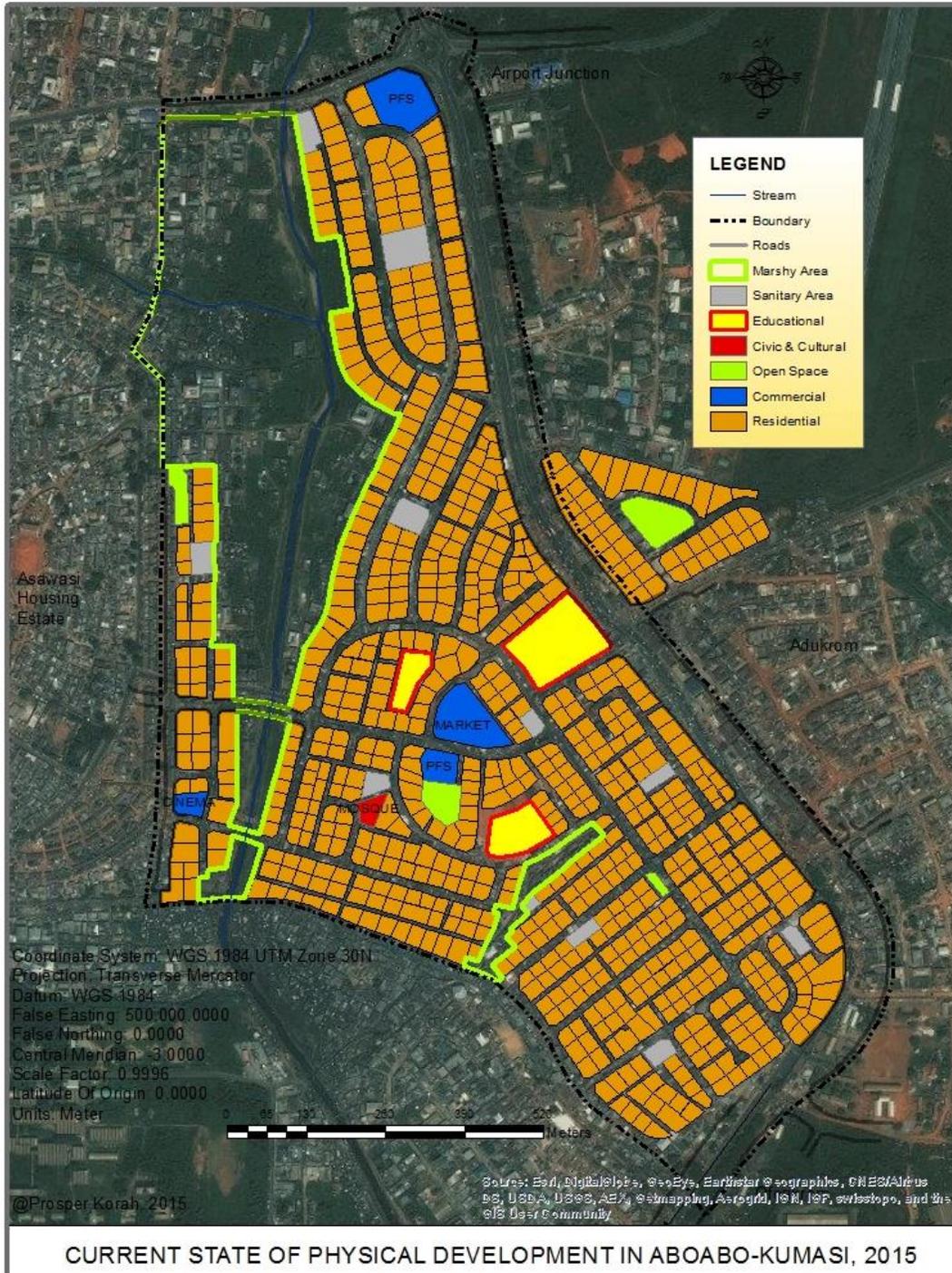


Figure 15: Overlay of Local plan of Aboabo on satellite imagery

Source: Based on field work, 2015

Comparing figure 14 and 15, physical structures could be spotted in the area earmarked as marshy and unsuitable for building. These physical structures, according to the local government act (462) were supposed to be demolished by the responsibly authority and the perpetrators punished. Aside the development in floodplain as shown in figure 15, another observed trend of physical development in Aboabo is the illegal extension of existing structures, thus blocking and narrowing the road reservations. The effect of narrowing the road space include: the inability of emergency vehicles such as fire fighters and ambulances to access certain areas of the neighbourhood in an event of fire breakout or any disaster. This means that the health and property of the people living in areas with reduced accessibility as a result of extension of the buildings close to the road are at high risk in terms of the impact of any disaster (eg fire).

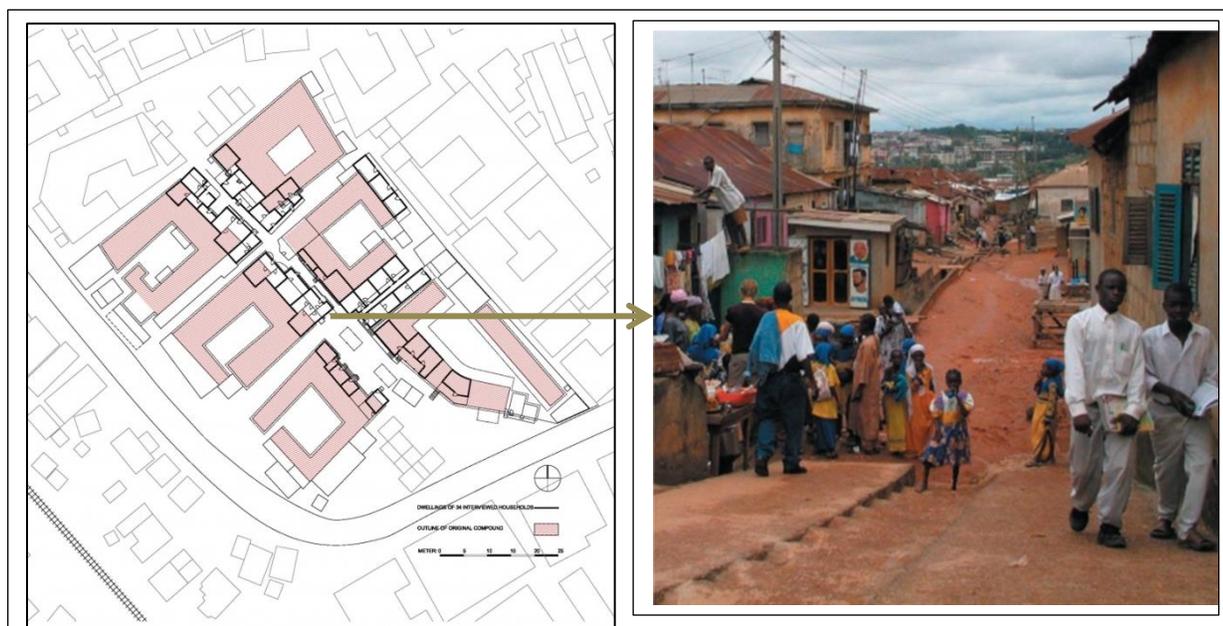


Figure 16: Typical Aboabo Street

Source: Based on field work, 2015 and [http://v1.germanarchitects.com/en/projects/40484\\_housing\\_extensions\\_in\\_kumasi/all/indexAZ](http://v1.germanarchitects.com/en/projects/40484_housing_extensions_in_kumasi/all/indexAZ)

These developments are non-linear (self-organising) and cannot be predicted in advance, they happen out of spontaneous or autonomous behaviour of the residents (actors). Access to land is critical to the survival and wellbeing of the people of Aboabo. These people will therefore make the most out of the available lands and this is the explanation for the illegal extensions being made to existing houses. This development is a self-organising behaviour that has both

positive and negative consequences. On the positive side, these extensions can contribute to increasing the supply of rooms for households which are already overcrowded. It is also a means of supporting socio-economic activities in the community such as creating space for hairdressing, barbering, tailoring among others. The space requirement of these economic activities commonly referred to as informal are often not included in land use plans. On the negative side, these extensions often lead to reduced accessibility because the road space is encroached by these unlawful extensions. The reaction of the Metropolitan Assembly is typically in the form of demolition of these structures. This sometimes leads to volatility as the inhabitants resist these attempts by the assembly and continue to defend their actions 'on ground of unfairness on the part of the state and the market to cater for their space needs' (Anokye et al., 2014).

The above situation reflects a reality in which the development of Kumasi emerges as a consequence of the interaction between planned and unplanned processes at various moments in time and space. The planned processes involve the local plans and zoning regulations whereas the unplanned processes involve self-organisation and self-regulation and organic development. This reality cannot be managed using familiar development control tools and this enhances our understanding about why the current institutional and regulatory frameworks for spatial planning in Kumasi tend to be inflexible and rigid. These regulations do not provide the necessary conditions for innovation and creativity as well as supporting autonomous development, which are essential prerequisites for every CAS.

### **Ayeduase**

Ayeduase is a neighbourhood that is close to the Kwame Nkrumah University of Science and Technology (KNUST) and exhibits both the characteristics of a slum and a well-developed urban landscape. The slum-like areas can be found at the core of this community whereas the outskirts are orderly developed. The core area in this neighbourhood developed without a formal plan and as a result lacks adequate infrastructure and services such as access roads and water. As at the time the formal plan was designed, the core area was mainly residential uses (figure 17). This was perhaps due to the need for housing with less regard for other uses such as commercial zones. This however changed in the years following 2003. The proximity to the university is having a great effect on the land use pattern and configuration of the community. Figure 17 shows the original plan showing the existing and proposed land uses as at the year 2003. Given

that the core area and the existing buildings as the year 2003 were residential, much of the plan area was zoned as residential. There was however, a contextual inferring factor that led to coevolution and emergence in the development of the community.

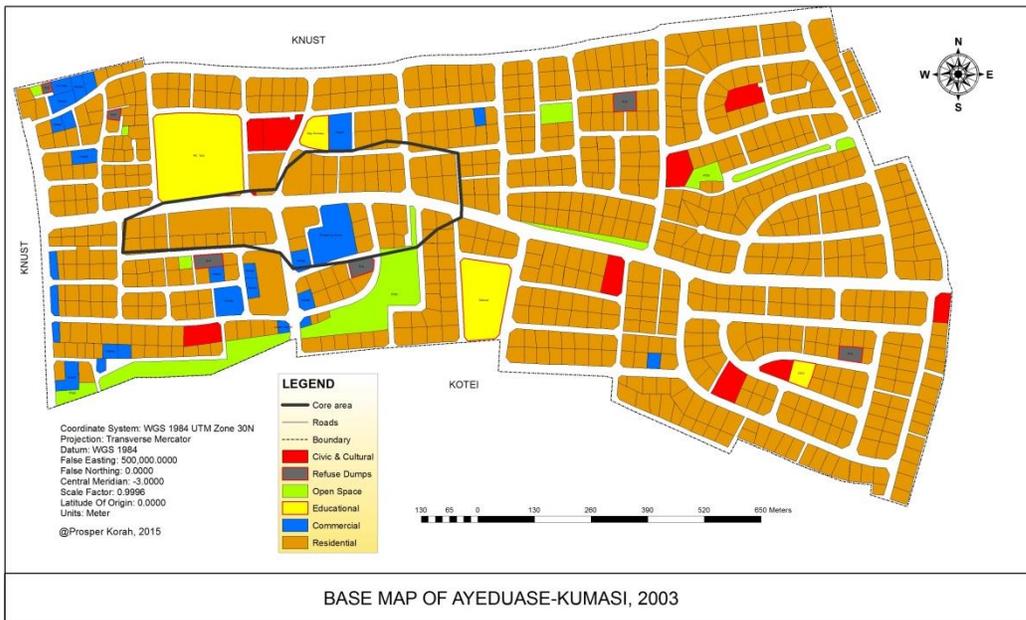


Figure 17: Base map of Ayeduase

Source: Based on fieldwork, 2015

Reforms in the accommodation policy of the university since the year 2009, such as ‘In-out-out-in policy’ and currently the ‘In-out-out-out policy’ have had an effect on the land use structure of Ayeduase. The ‘In-out-out-in policy’ meant that students in the first and fourth year were granted admission into the university halls of residence. The ‘In-out-out-out’ meant that only freshmen undergraduates were allowed to stay in the university halls of residence (Adu-Gyamfi et al., 2014). The latter policy came into effect from the 2013/2014 academic year. This development has ultimately shaped the present land use pattern of Ayeduase, a number of hostel facilities have been constructed and private houses converted to what is popularly called homotel<sup>7</sup>, in order to meet the growing demand for accommodation by students. There is also the proliferation of commercial activities such as printing shops and restaurants. The areas at the core of the neighbourhood have transitioned from residential to commercial. The local plan of Ayeduase (2003) did not take into account, these uncertainties and contextual changes.

<sup>7</sup> A homotel is a private apartment that is rented out to students. Going by structure and function, it is not supposed to be used as a hostel.

The housing policy reforms of the university have had a triggering effect on how people perceive and use space in Ayeduase.

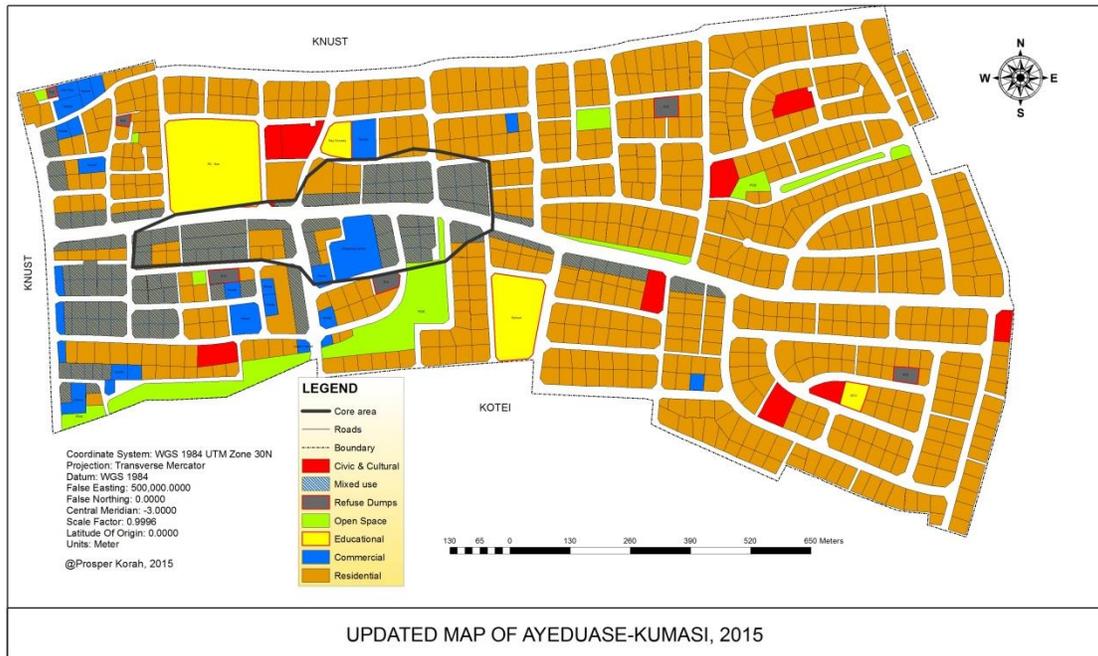


Figure 18: Current state of development in Ayeduase

Source: Based on field work, 2015

The current physical development in Ayeduase is not the future as envisaged by the 2003 local plan. The plan was specific about the distinct land use types (eg commercial, residential, education) and where these land uses were to be developed. Areas originally designated as residential have been converted to commercial and mixed use zones as seen in (figure 18), whereas open spaces and watercourses have been encroached. In effect though the Ayeduase local plan was wonderful and showed visions of how future development should proceed, it became limited when juxtaposed with reality. The reason being that it was designed based on a linear world in which situations are stable and predictable. Socio-economic, cultural and political situations are however not stable and static, they change with time and so do urban areas. Another reason why reality in Ayeduase is different compared to the plan could be due to the conflicting nature of the planning regulations for example;

Where a person submits an application for a building permit, the District Planning Authority shall notify him within seven (7) days of the receipt of the application and shall within a period of 3 months thereafter notify the applicant whether the application is granted or refused. An applicant not informed of the grant or refusal of the application

may after the expiry of the 3 months commence development on the basis that application is acceptable to the District Planning Authority [LI 1630 Sec. 8 (1, 2)]

This provision contradicts the Local Government Act (462) Sec. 55 which gives the Planning Authority (PA) power to demolish any structure that does not conform to the approved scheme. In effect, there appears to be fragmentation in the regulatory framework for planning in Kumasi and thus, making them unable to support the transformation of Kumasi. On the other hand, even if these regulations were to be integrated and the planning institutions working in a coordinated manner, it would still be difficult to control Kumasi's development in a linear way (see Albrecht, 2004 and Geddes, 1968). What goes on in urban areas is just too dynamic, intricate and mazy thus making prediction difficult. Again, it supports the claim of Alfasi and Portugali (2007) that functional planning, which places more emphasis on command and control becomes limited in guiding the transformation of urban areas that are dynamic and evolving.

Another trend that is happening in Ayeduase especially at the peripheral areas is the construction of detached houses which are often gated. This is a transition from the traditional compound houses (refer to chapter 3) which characterise the core areas of several neighbourhoods in Kumasi. This rising construction of detached and gated houses could be attributed to security threat and the need to ensure minimum privacy (see Landman, 2004). It is also a consequence of cultural change in Kumasi (increasing preference for nuclear family over extended family). Self-organisation which is resulting in the spontaneous emergence of these detached and gated homes is difficult to predict during the planning process. It is often a challenge, to predict the kind of homes people are going to build based on a local plan. Construction of detached houses over compound houses has implications for the provision of utility and infrastructure as the cost per capita of the provision of these utilities increases with detached houses compared to compound. The pressing issues however, are: could the trend of developing gated houses change once there are no security issues? And what happens when people now want more social integration? The answer to these questions perhaps is for the planners in Kumasi to understand self-organisation (which results in spontaneous patterns) in Ayeduase and how it can complement the functional plan.

Aside self-organisation (which results in the detached houses), the issue of urban sprawl, defined as low density development and space fragmentation is also attributed to the

proliferation of detached and gated homes (Landman, 2004). Though the Ayeduase local plan indicated the type of land uses allowed in a particular area, reality did not conform to it. Figure 19 is evidence of a structure that is located in an area zoned as nature reserve. Nature reserves in local plans are supposed to be protected from development because these areas are usually low lying and watersheds and hence not suitable for building. The phenomenon of developing urban structures in nature reserves has been reported to be the major cause of flooding in Kumasi recently (see Owusu-Ansah, 2015). In a nutshell, the reality in Ayeduase is far more opposing to the ideal envisaged by the local plan. This is therefore directing attention to the need for spatial planners in Kumasi to accept uncertainty and non-linearity as guiding principles in designing plans. The next section (section 4.4) discusses how spatial planners in Kumasi manage non-linear developments.



Figure 19: A structure in a floodplain and a gated house in Ayeduase

Source: Based on field work, 2015

#### 4.4 Spatial Planners encounter with non-linear developments in Kumasi

Planners in Kumasi are becoming aware of a reality in which there is no one true world, but rather, a world in which planning rules with citizens apply. There is therefore a need to adopt non-traditional approaches to guiding the growth of Kumasi. This is perhaps due to the recognition that planning issues are complex and continue to evolve. Clearly, only regulatory based approaches are not enough. Regularisation of settlements which are there without official planning schemes is one strategy for accepting foreseen or unforeseen urban dynamics. This is accepting reality and adapting plans to this reality by aligning the current development with

formal planning. In this case it becomes development before planning instead of planning before development. This is so because Kumasi is fast urbanising and physical development in most instances outpaces spatial planning. Regularisation therefore is not always a first choice, but rather a reaction to prevailing development because the planning laws in Ghana mandates that no physical development should proceed on any piece of land until after a plan has been designed and approved for that area.

There are certain areas that develop orderly even though they do not have any formal plan. An example is Bokoro neighbourhood. In this case we regularise the neighbourhood by designing new plans and revising old ones to incorporate current trends of development (Kumasi Metropolitan Town Planning Officer, April 2015)

This approach however, is based on the premise that the concerned neighbourhoods meet certain basic conditions such as property rights. The residents in such neighbourhoods need to have legal titles to the land before regularisation can take place. This is perhaps to avoid a situation where citizens will go ahead and claim more land by virtue of developing structures on such lands. In neighbourhoods, where the overall development is irregular, lack essential public services such as sanitation and access to water, the approach is generally to upgrade. These neighbourhoods are usually slums which have evolved progressively over many years and because of this eviction and resettlement are not always options.

In Kumasi, several upgrading activities have been undertaken to improve the infrastructure and living conditions of slum dwellers. The challenge however is these projects become unsustainable because of lack of support from the slum communities (Metropolitan Town Planner, April, 2015).

Regularisation and upgrading are examples of improvisation adopted by the planning authorities in Kumasi to manage non-linearity. Slum upgrading and regularisation are lauded because they improve the physical infrastructure (eg roads, electricity, and water), guarantee security of land for citizens and improve the living conditions of informal dwellers (eg Winayanti & Lang, 2004). These approaches though laudable are usually 'reactive' because the policy makers do not fully appreciate the dynamics of these slums and as such these upgrading projects are usually designed to solve the issues as they are; the here and now and in no time, reinforces the proliferation of more slums. The fundamental issues in urban development and slum upgrading is about the increasing number of urban residents and the challenge of providing sustainable infrastructure and services in growing informal settlements (see Abbot, 2002a; 2002b). Slum upgrading is therefore complex and unclear because it entails several

interrelated components such as physical, social, environmental and economic issues that must be addressed not only in the short term but also in the long term. It is therefore fundamental that any slum upgrading should involve several actors (eg the community, state and community leaders) as well as planning for the long term sustainability of these informal settlements (Maggi & Majani, 2006).

Nevertheless, slum projects in Ghana are usually meant to address the symptoms of slums instead of the root causes (see Amoako & Cobbinah, 2011). These slum projects in most cases are implemented with less consultation with the citizens, focuses on the upgrading of physical infrastructure (eg roads, sanitation) and with little or no consideration for livelihoods and employment. It is however, clear that one plausible cause of informality and slum settlements in Kumasi is the nature of planning regulations such as aiming for unrealistically standards including but not limited to; large minimum plot sizes, development and construction restrictions and strict zoning which together, have led to high land prices. This favours the high and middle class to the neglect of the poor. The resultant effect is overcrowding, occupation of marginal and flood susceptible lands, illegal extension of existing buildings and encroachment on open spaces. Furthermore regularisation and slum upgrading have also been critiqued for supporting the middle and high class to the neglect of the poor. A common cited example is usually gentrification which is an outcome of land regularization (Fernades, 2011).

Again through assessing and granting of permits for change of use and rezoning. The planning authority is able to overcome the challenges of non-linear development. This happens when there is the need or opportunity to change the use of a property for instance from residential to commercial use, perhaps due to changes in socio-economic conditions or where development generally is opposing to that particular land use.

When an individual submits an application for rezoning or change of use of property, we do an initial assessment by visiting and inspecting the site in order to satisfy ourselves that, the change of use will not conflict with adjacent land uses and that it will not also become a public health or safety issue (Metropolitan Town Planner, April, 2015).

Surmising from the above, it is clear that plans that are prepared with a straight forward understanding of reality-with specific zones are limited. They are not able to respond to dynamic socio-economic issues and innovation. These plans in most cases have to be constantly revised by Kumasi's planning department in order to match reality.

A fourth and final approach to managing unexpected developments, is through demolition of structures without legal support in the form of title to the land and building permits. Again structures in watercourses are usually removed to prevent what is known as human-induced flooding. ‘We are responsible for ensuring that any development in the metropolis goes according to the approved scheme. In cases, where there are un-authorised developments, we serve notice to the developers to produce building permits. If they are unable, to produce building permits to that effect, we go ahead to demolish these structures’ (Metropolitan Development Control Officer, April 2015). The destruction of unauthorised structures in Kumasi is usually aimed at reducing excessive vehicular traffic and congestion. It is also a way of protecting the beauty of the city’s landscape and a means to secure public open spaces. This approach by the institution is justified on grounds of protecting public interest. As explained earlier, the destruction of unauthorised structures in Kumasi is usually a reactive approach in response to what has materialised unofficially/illegally. This approach is not proactive and while in the short term it is seen as effective in managing development, it does not provide the means by which the recurrence of future unauthorised structures can be prevented. What is perhaps important is for the Planning Authority in Kumasi to understand the reason for the proliferation of these unauthorised structures in Kumasi as a first step towards proactively guiding the development of Kumasi.

## CHAPTER FIVE

### TOWARDS A POST-NORMAL SCIENCE CONCEPT OF SPATIAL PLANNING IN KUMASI

#### 5.1 Introduction

**K**umasi as the second largest city of Ghana has evolved over the years through the inter (actions) of the various actors who together have created spontaneous patterns (refer to chapter 4). These inter (actions) are based on both planned and unplanned processes. The plan processes stem from the structure plan and local plans as well as the supporting legislations. The unplanned processes are due to self-organisation and autonomous processes of development in Kumasi. These processes are often difficult to detect and predict in advance. This is supported by the empirical analysis of the transformation of two neighbourhoods of Kumasi (Aboabo and Ayeduase). Comparing and contrasting the literature on Complex Adaptive Systems (CASs) and the empirical evidence from the development and transformation of Kumasi can offer insights on how spatial plans could be designed to make these plans flexible and respond to contextual changes.

#### 5.2 Theoretical and empirical reflection

**T**he literature and empirical results of this study showed that the development of Kumasi is epitome of CASs because these systems are open, meaning they exchange matter and information as opposed to closed systems (de Roo, 2010). The development of Kumasi has been influenced by political, cultural and socio-economic factors. The transformation of Kumasi is also opposing to the view that CASs are capable of maintaining order and stability without external influence (Alfasi and Portugali, 2007). CASs are also believed to have the capacity to evolve autonomously without central guidance (Rauws et al., 2014). In Aboabo, a neighbourhood of Kumasi, individuals (actors) made illegal extensions to houses which are blocking and narrowing access roads. If this development is unchecked, in the near future, accessibility would be limited in Aboabo with increased disaster (eg fire) risk. Furthermore, some physical structures were found in watercourses in Aboabo and this trend has been reported to be a major cause of recent floods in Kumasi (eg Owusu-Ansah, 2015). This presupposes that some form of robustness through enforcement of planning standards need to be maintained in urban planning and development. This will ensure that marginal lands and areas susceptible to

flooding in Kumasi are protected from development. This therefore requires command and control by the Planning Department of Kumasi.

The findings however support the view that CASs are always ‘becoming’ (de Roo, 2010) and functional planning approach which aims at controlling land use through zoning and regulations seems limited in guiding their development (Alfasi & Portugali, 2007). Kumasi has fundamentally changed in terms of population, culture and socio-economic activities. These together masterminded the form and configuration of spatial development (structure and function) of Kumasi. From the demographic point of view, the population has increased from about 460,000 people in 1984 to about 2 million in 2010. In socio-economic terms, the trend has been the increase in the number of informal activities and commercial activities. In the year 1954, about 54% of the labour force in Kumasi was engaged in the informal sector and this increased to about 70% in 2011 (Afrane & Ahiable, 2011) and is expected to continue increasing. The structure and function of Kumasi therefore continue to coevolve jointly to match these changing demographic and socio-economic trends.

The empirical evidence of the development of Kumasi (eg Ayeduase outskirts) depicts fragmentation (see Ichikawa et al., 2006) because of the dispersal of structures particularly at the peripheries of Kumasi. CASs can undergo biological-like evolution by not just operating in an environment created for them initially but have the ability to alter that environment (Wadhawan, 2013). This is also evident in the conversion of land uses from residential to commercial (at the CBD) and the change of use and function of structures (Ayeduase). These were not envisaged by the original plan.

The planning system in Kumasi is also uncompromising to the changing demographic, socio-economic and political situations. The standards that were used during the colonial era (19<sup>th</sup> and early 20<sup>th</sup> century) are still used in contemporary planning in Kumasi. These are strict and generic planning standards which are supposed to be applied irrespective of place (eg informal settlements). These planning standards eventually proved limited in guiding the growth and development of Kumasi as certain neighbourhoods (eg Aboabo) lacked the requisite basic infrastructure and minimum housing qualities. The standards have triggered the surge in land prices which forced the poor to settle in undesirable lands and areas zoned as nature reserves (see figure 15). This development presupposes that land development in urban areas is a culmination

of the interaction between institutions and self-organisation (Zhang et al., 2015). This means that spatial plans should be seen as part of the configurations necessary to assist self-organisation in urban development (Rauws et al., 2014). These spatial plans however, require some amount of robustness through central guidance in order to prevent undesirable landscapes (eg urban structures in watercourses and slums). The implication is that: plans must be adapted to specific neighbourhoods in Kumasi according to the characteristics of these neighbourhoods. This means that conditions should perhaps become more important in certain cases rather than content and process in planning.

### **5.3 Towards a post-normal science spatial planning concept in Kumasi**

**T**he post-normal science is a concept which is to be adopted in cases when ‘facts are uncertain, values in dispute, stakes high and decisions urgent’ (Funtowicz and Ravetz, 1991). The crust of the post-normal science concept is about decision making in uncertainty. The nature and form of development in Kumasi based on the findings of this research is uncertain in most cases and yet decisions must be made and spatial plans designed to guide Kumasi’s transformation. Turning to the post-normal science concept, spatial plans could be designed with certain principles which will make them less susceptible to the threat of dynamism in urban areas. Spatial plans designed with certain principles, can make these plans responsive to changing socio-economic, political and cultural factors which affect urban development.

#### **Principles**

##### ***Flexible plans***

It can be seen that the Ayeduase local plan was not flexible enough to respond to contextual interference. The current land use structure of Ayeduase was not the envisaged reality. The implication is that there could be multiple realities in designing plans. This means relaxing certain aspects of the planning standards to allow for mutual independency between plans and self-organisation. For example, instead of designing plans that are implemented based on strict and generic standards, plans can be retrofitted to neighbourhoods according to the characteristics of these neighbourhoods. This means a plan for a slum community should have different implementation standards compared to a high class residential area. In an area that has already developed and is a slum, the approach would be to monitor trends and intervene when necessary instead of fruitless efforts aimed at controlling their development with a formal plan. This means

involvement of the actors (citizens) of informal settlements in the planning process. Through actor consulting and socio-economic survey, spatial planners in Kumasi could get an idea of the needs and space requirement of these informal settlement dwellers in terms of economic activities. This will then be the basis for integrating the informal sector into spatial plans to act as catalyst for autonomous development and self-organisation. Making room for the space requirement of informal activities in spatial plans in Kumasi can serve as a condition and opportunity for informal settlements in Kumasi to coevolve, innovate, adapt, and survive in a changing and competitive world.

### ***Creating variable sectors***

Creating variable sectors means that zoning regulations and planning standards for a given use of land are determined but do not show the specific location on the map. This is feasible for areas that have not been developed yet. For example, according to the planning standards (Ghana), a low density (or high class) residential area is supposed to contain 88 persons per hectare (maximum). On the land use plan, this area would be capable of being developed anywhere provided it does not conflict with other land uses. It is therefore important to clarify some uses that could have specific location on the map in order to avert this conflict and ensure safety and public interest. These land uses include, fuel/gas filling stations, heavy industries, education, sanitary areas, nature reserves and open spaces. These land uses should have exact locations on the map and enforced through robust standards. The other land uses such as commercial, residential, civic and cultural should be floating and the development of these can occur anywhere on the map but also in accordance with the zoning regulations. Through the creation of variable zones, the urban area will have the capacity to adapt and coevolve in times of socio-economic changes and technological advancement. This will however, require constant monitoring of development and being aware of the structural deficiencies such as inadequate logistics and lack of requisite personnel of the planning institutions in Ghana, the use of Geographic Information System (GIS) can help. With GIS, the land use plans can be geo-referenced, digitized and overlaid on satellite imagery and any discrepancy in terms of development particularly the undesirable ones can be spotted. Undesirable development here refers to for example development in a watercourse.

### ***Strategic plot development and mixed land uses***

Another principle of the ‘post-normal science’ concept of planning is the need to ensure strategic development of plots. Strategic development of plots here means allowing a number of land uses to co-exist and mutually support each other. This means relaxing the zoning regulations, particularly height and use zoning. With this, the nature and form of development on a piece of plot would be indeterminate. This would allow for instance, small scale commercial activities to be interspersed with residential development and also promote novelty. This means that the market and prevailing contextual factors such as socio-economic and cultural will determine the nature and overall configuration of development in an area. Areas would also have the opportunity to redevelop whenever necessary. Adopting this approach can save the planning authority time and efforts in assessing numerous applications for change of use and redevelopment, which is the result of inflexible plans.

The challenge however is; would not this approach lead to undesirable skylines? and can a plan based on this orientation be able to enhance the quality of neighbourhoods? Reflecting on these concerns, the solution perhaps might be for the various actors in the planning and development of Kumasi; planners, property developers, traditional authorities and residents to appreciate and understand that planning rules and self-organising behaviours are interdependent (Zhang et al., 2015). This means greater collaboration and participation is required in the planning process.

### ***Developing an infrastructure layer***

The last but not the least principle of this new approach to spatial planning in Kumasi, is to determine the infrastructure requirement of any area and provisions made for these in the spatial plan. Infrastructure such as roads, water pipelines and electricity are critical for the functioning of any human settlement. The current spatial plans in Kumasi are supposed to indicate the infrastructure requirements and ideally, develop the infrastructure before any other development. In practice, the reverse is true, where development precedes infrastructure development and the consequence is the proliferation of slum communities with deficient infrastructure and services as seen in the Aboabo case. The problem is partly due to the high cost involved in developing the necessary infrastructure. To overcome this, public-private partnership can be the solution. The Kumasi Metropolitan Assembly (KMA) and traditional authorities can enter into a partnership with real estate companies by allowing these companies to develop the needed infrastructure on

any piece of land before plots are given out for sale. In this case, the cost of plots will entail the land plus the infrastructure. This arrangement will benefit the KMA, traditional authorities, estate companies and developers. The dilemma, however, is that the poor is likely to be denied access to land in the city because they might not be able to afford the price of a serviced land and potentially leading to further development of slums. The solution perhaps is to allow certain areas in the city that are already slums to evolve autonomously and supporting them with the needed infrastructure.

#### 5.4 Governance strategy for post-normal science spatial planning concept in Kumasi

Knowing when to apply each principle is crucial for guiding the transformation of Kumasi. The transition model (figure 20) can serve as a guide for spatial planners in Kumasi to determine the sort of strategy to adopt and at what circumstance.

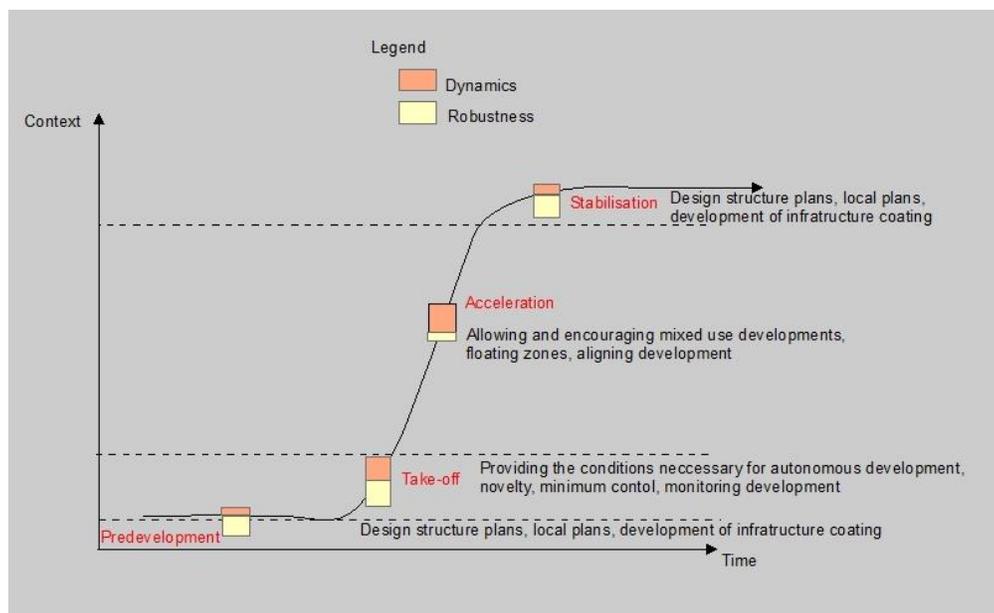


Figure 20: Transition and planning approach

Source: Author's construct based on de Roo (2014) and Rotmans et al. (2001)

The vertical axis represents the context of planning which includes socio-economic, physical conditions, demography, cultural, environmental and technological advancement. These factors are not static, they change with time, they are always becoming. The horizontal axis therefore represents the time. Certain areas in Kumasi depending on their characteristics can be classified

as being in the predevelopment, take-off, acceleration or stabilisation stage (see chapter 2). Nevertheless, the majority of areas in Kumasi are in the acceleration stage. This requires both central guidance and autonomous processes (eg self-organisation). Spatial planners in Kumasi however, are accustomed to the traditional land use planning-with emphasis on command and control. This model is prescriptive and its success will depend on the willingness of spatial planners in Kumasi to accept non-linearity as a reality and their ability to respond to it.

## 5.5 Critical reflection

Conceptualising urban areas as CASs is the basis for proposing the post-normal science concept of spatial planning in Kumasi. Spatial plans designed in accordance with the post-normal science perspective can allow plans to be flexible and support the adaptive capacity of urban areas. The post-normal science concept of spatial planning is attractive but the implementation of the principles that underpin this approach in practice raises a number of questions. Consequently, upon reflecting on the approach, the following concerns are raised and the means by which these can be addressed are discussed.

The first concern is: *to what extent can plans be flexible and open without ceasing to be plans?* The post-normal science principle of creating flexible plans raises serious doubts about whether these plans would be able to be robust enough to withstand external and internal pressures (eg chaos of destruction) in urban development. Reflecting on this, there is the need to find a balance between stability and dynamism in the urban development. There are certain land uses by virtue of their nature, need to be predefined with exact location on the map. These land uses are: water, electricity and sanitation infrastructure, drainage system, roads, gas/fuel filling stations, open spaces, nature reserves and heavy industrial areas. The assumption is that these land uses are prerequisites for the functioning of any human settlement and that these land uses can be predicted in advance thus allowing the enforcement of robust standards. On the other hand, certain land uses (eg residential, commercial, civic & cultural) cannot be predicted in advance because these land uses are influenced by prevailing demography, economic activities and political conditions in the urban area. The exact location of such land uses could therefore be indeterminate and should depend on conditions. The fundamental issue is to accept that though a land use plan can prevent undesirable outcomes, it is not able to ensure that desirable outcomes will take place as and when needed (Albrecht, 2004). So the future is not known and the only

way out is to have dynamic scenarios, flexible and open plans as conditions for continuous adjustment and strategic development in the urban area.

Secondly, the post-normal science approach to spatial planning also emphasises on the need to make room for multiple development trajectories by designing alternative plans (scenario planning). This presupposes that the planner is able to know all possible alternative futures in advance. This however contradicts CASs (the becoming) perspective which is that CASs are both robust (certain) and dynamic with time (uncertain). Under certainty, planners would be able to predict and plan, however, it is not possible to predict in situations of uncertainty. This uncertainty in urban planning and development raises the dilemma of whether to plan or not to plan at all since we do not know what the future is likely to become. Again we cannot know the path before us until we have walked it and the best thing is to have the tools that might be needed on the way (see Bollinger et al., 2014). It therefore becomes necessary for spatial planners to resort to conditions as means to constrain or enable the development of Kumasi instead of blueprint plans in times of uncertainty. This means that planners would monitor development and enable or support the desirable development whiles constraining the undesirable. Desirable development in the case of Kumasi refers to for example gentrification (chapter 3) while undesirable development refers to the building of urban structures in watercourses (Aboabo). The question then arises: what conditions will enable desirable development and constrain the undesirable? In Kumasi, upgrading of infrastructure in informal settlements could be one of the conditions for triggering gentrification and regeneration in these settlements. In addition, the Buildings Regulation Act, LI 1630 (1996) need to be revised to include the use of local building materials (eg soil bricks) in informal settlements instead of only relying on standardised materials (eg cement blocks). These standardised building materials are costly and this prevents the poor from building new homes and hence, the illegal extension of existing homes (see Aboabo case). To constrain development in marginal lands, the existing planning laws need to be enforced including but not limited to eviction and removal of; people and urban structures in watercourses respectively.

## CHAPTER 6 SUMMARY & CONCLUSION

### 6.1 Summary

In this research, Complex Adaptive System (CAS) perspective of urban development was adopted to explore the link between spatial plans and real world development. An analysis of Kumasi structure plan and the transformation of two neighbourhoods (Aboabo and Ayeduase) revealed that urban development is influenced by both formal and informal processes. The formal processes include the plans and planning institutions while the informal processes include for example self-organisation, which results in spontaneous emerging patterns (informal settlements). These spontaneous emerging patterns cannot be predicted in advance and in most cases, their trajectory differs from that of the plan. The implication is that there is the need for spatial planners to find a way of designing plans that would be capable of responding to changes in context. From the forgoing, a post-normal science concept of spatial planning was proposed to forge a link between the formal plans and standards and the need for dynamism, autonomous development and innovation in Kumasi.

### 6.2 Answering the research questions

#### ***How do plans incorporating uncertainty support the transformation of urban areas?***

The literature indicates that plans that incorporate uncertainty support the development of urban areas by being flexible and adaptable to prevailing contextual conditions (de Roo, 2010; Alfasi and Portugali, 2007; Albrechts, 2004; Booth, 1995). In the case of Kumasi, the main function of plans is to provide certainty for developers and protect public interest. Plans therefore become rigid and unyielding to the inevitable need for innovation and transformation, resulting in emergence. Emergence is a balance outcome between the rigid plans and regulations and autonomous development in Kumasi.

#### ***How do spatial planners in Kumasi incorporate uncertainty in spatial plans to support the transformation of Kumasi?***

The findings suggest that spatial plans used for guiding the transformation of Kumasi become rigid and do not respond to contextual changes. The reason for this is that, these plans are supposed to show the location, concentration, form, amount, and coordination of land development required for the various land uses, including: housing, industry, recreation,

transport, education, nature, agriculture, cultural activities (see Albrecht, 2004). Further to this, the planning standards and zoning regulations supporting the enforcement of the land use plans are also strict and generic. These inflexible rules and zoning standards such as large minimum plot sizes is compelling the poor in Kumasi to build and live in structures that are visible in floodplains and marginal lands. Though plans are constantly being revised and rezoned to incorporate prevailing developments, this approach is commonly reactive and focuses on the being and not the becoming.

### ***Would this research give reasons to rethink spatial plans in Ghana?***

The findings from the research show that urban development is a CAS with implications for how plans are conceived and operationalised in these urban areas. The current approach to spatial planning in Kumasi (Ghana) is one that overly relies on content and process to the neglect of conditions. This makes it difficult to design and implement plans that will match development and progress, with the authorities sometimes resorting to the removal of unauthorised structures as means to correct the mess in terms of development. To provide policy direction and a more proactive approach to guiding the development of urban areas in Ghana, the ‘post-normal science’ concept of spatial planning is proposed. The crust of this concept is that planners should recognise the interdependency between spatial plans and autonomous processes such as coevolution, emergence and self-organisation. Understanding the contextual environment and why certain things emerge and through what, can become an excellent opportunity for guiding urban transformation. In effect, the role of the planner would be a transition manager; understanding case-context relationship, sustaining desirable development and minimising undesirable ones and providing conditions for novelty in the urban area through flexible, open plans.

## **6.3 Conclusion**

Urbanisation is dominant, not only in developing regions, but the entire world. The continuous change in the demographics, environmental conditions, political factors and cultural orientation in urban areas bring about emergence and the creation of configurations that are hardly envisaged by spatial plans. The notion of complexity in urban planning is gaining recognition because cities or urban areas are now seen as open systems which exchange matter, information and energy with their environment and with numerous parts which make it difficult

to establish direct causal relations among them. These characteristics make it difficult to predict the behaviour of such systems and to direct their growth in a particular pattern (Allmendinger, 2009; de Roo, 2010; Portugali, 2006).

Plans that are designed with a straight forward understanding of reality tend to be inflexible when faced with dynamism of urban areas and in most cases these plans do not reflect development in reality. Planners increasingly are being challenged to find suitable approaches that will guide the unpredictable transformation of urban areas. This is because; the generic and strict standards that are used in planning and governing the development of urban areas particularly Kumasi are being tested by the unique characteristics of CASs. The broad aim of this study was to assess the capacity of spatial plans to guide foreseen and unforeseen urban dynamics using Kumasi (Ghana) as case study. The results show that Kumasi's growth and development is fashioned by the spatial plans, planning institutions and self-organisation. Self-organisation which results in spontaneous patterns (eg informal settlements) formation is dominant in Kumasi, yet self-organisation is not part of the planning rules and regulations in Kumasi. This is one of the reasons why development in Kumasi took a different course in relation to the spatial plans. As seen in chapter 4, the Planning Department in Kumasi in most instances resorts to reactive approaches such as upgrading and regularisation of settlements that emerge without official plan. These approaches though laudable, provide solutions for only the short term and are not sustainable.

This research has contributed to the arena of spatial planning by proposing the 'post-normal science' concept of planning and development of cities. This approach is based on the findings of the transformation of Kumasi and therefore needs further testing and refining before it can be used for other urban areas. Further research is needed to determine the willingness of spatial planning practitioners to accept non-linearity as a reality and their ability to respond to it. Spatial planners in Kumasi for example fear they may lose their power and authority if they were to allow autonomous processes in Kumasi. Again, how can planners guarantee mutual independency between plans and autonomous development? Who benefits and who loses? Will it safe-guard public interest and enhance the quality of neighbourhoods? Nevertheless, the results of this research has provided basis for reflecting on the role of plans in Ghana and a laying a foundation for further discourse regarding appropriate strategies to guide urban transformation.

## REFERENCES

- Abbott, J. (2002a). An analysis of informal settlement upgrading and critique of existing methodological approaches. *Habitat International*, 26, 303-315.
- Abbott, J. (2002b). A method-based planning framework for informal settlement upgrading. *Habitat International*, 26, 317-333.
- Adarkwa, K. K & Oppong, R.A. (2005). Gentrification, use conversion and traditional architecture in Kumasi's Central Business District-Case study of Adum precinct. *Journal of Science and Technology*, 25(2).
- Adarkwa, K. K. (2011). *Future of the Tree Towards growth and development of Kumasi*. Kumasi: University Printing Press, KNUST.
- Adarkwa, K. K. (2012). The changing face of Ghanaian towns. *African Review of Economics and Finance*, 4(1).
- Adu-Gyamfi, S., Brenya E. & Lamptey E.E.L. (2014). Accommodation Reforms and its effects on students: A focus on Kwame Nkrumah University of Science and Technology from 1960 to 2013. *Global Journal of Human- Social Science*, 14(2).
- Afrane, S., & Ahiable, G. (2011). The informal economy and microfinance in Kumasi. In K. K. Adarkwa, *The future of the tree: Towards growth and development of Kumasi* (pp. 111-127). Kumasi, Ghana: KNUST Printing Press.
- Agribigbola, A. (2008). Improving urban land use planning and management in Nigeria: The case of Akure. *Theoretical and Empirical Researches in Urban Management*, 3(9).
- Ahmed, A. & Dinye, R. D. (2012). Impact of land use activities on Subin and Aboabo Rivers in Kumasi Metropolis. *International Journal of Water Resources and Environmental Engineering*, 4(7), 241-251.
- Albrechts, L. (2004). Strategic (spatial) planning reexamined. *Environment and Planning B: Planning and Design*, 31, 743-758.
- Albrechts, L. (2006). Bridge the Gap: From Spatial Planning to Strategic Projects. *European Planning Studies*, 14(10).
- Alfasi, N. & Portugali, J. (2007). Planning rules for a self-planned city. (164-182, Ed.) *Planning Theory*, 6(2).
- Alfasi, N. (2004). Planning Just-in-Time versus planning Just-in-Case. *Cities*, 21(1), 29-39.
- Alfasi, N. (2006). Planning policy? Between long-term planning and zoning amendments in the Israeli planning system. *Environment and Planning A*, 38, 553-568.

- Alfasi, N. and J. Portugali. (2007). Planning rules for a self-planned city. (164-182, Ed.) *Planning Theory*, 6(2).
- Allmendinger, P. (2009). *Planning Theory*. London: Palgrave, Mac Millan.
- Amoako, C. & Cobbinah, P.B. (2011). Slum Improvement in the Kumasi Metropolis, Ghana-A Review of Approaches and Results. *Journal of Sustainable Development in Africa*, 13(8).
- Amoako, C., & Koboe, D. (2011). Historical Development, Population Growth and Present Structure of Kumasi. In K. K. Adarkwa, *Future of the Tree; Towards growth and development of Kumasi* (pp. 35-54). Kumasi: University printing press, KNUST.
- Amoateng, P., Cobbinah P.B. & Owusu-Adade, K. (2013). Managing physical development in peri-urban areas of Kumasi, Ghana: A case of Abuakwa. *Journal of Urban and Environmental Engineering*, 7(1), 96-109.
- Anigye Newsletter. (2013, April). (10). Anigye Newsletter.
- Anokye, P.A., Afrane, S.K. & Oduro-Ofori, E. (2014). The informal apprenticeship system in Ghana: post graduation job integration and its implications for the management of urban space. *Journal of Environment and Earth Science*, 4(18).
- Awuah, J. J. (2014). Retrieved may 23, 2015, from <http://www.dailyguideghana.com/traders-structures-destroyed/>
- Balducci, A., Boelens, L., Hillier, J., Nyseth, T. & Wilkinson, C. (2011a). Strategic spatial planning in uncertainty, theory and exploratory practice. *Town Planning Research*, 82(5), 481-501.
- Balducci, A., Fedeli, V., & Pasqui, G. (2011b). *Strategic Planning For Contemporary Urban Region: a City of Cities: a Project for Milan*. Ashgate, UK.
- Boamah, N. A., Gyimah, C. & Nelson, J.K.B. (2012). Challenges to the enforcement of development controls in the Wa municipality. *Habitat International*, 36(1), 136-142.
- Boapeah, S. (2001). The informal economy in Kumasi. In Adarkwa, K.K. & Post J., *The fate of the tree: Planning and managing the development of Kumasi, Ghana* (pp. 59-77). Accra, Ghana: Woeli Publishing Services.
- Booth, P. (1995). Zoning or Discretionary Action: Certainty and Responsiveness in Implementing Planning Policy. *Journal of Planning Education and Research*, 14, 103-112.
- Byrne, D. (2003). Complexity theory and planning theory: A necessary encounter. *Planning Theory*, 2(3), 171-178.
- Cillier, P. (1998). *Complexity and Postmodernism*. London: Routledge.
- Clark, B. (2003). Ebenezer Howard and the marriage of town and country: An introduction to Howard's Garden Cities of To-morrow (Selections). *Organisation and Environment*, 16(1), 87-97.

- Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability. *Technology in Society*, 28, 63–80.
- Commonwealth Association of Planners. (2006). *Reinventing Planning: A New Governance Paradigm for Managing Human Settlements*. A Position Paper developing themes from the Draft Vancouver Declaration for debate leading into the World Planners Congress, Vancouver 17-20 June 2006.
- De Roo, G. & Porter, G. (2007). *Introducing Actor-Consulting as a Means to Address Fuzziness in Planning and Decision-Making*, in *Fuzzy Planning*. Ashgate, UK.
- De Roo, G. (2003). *Environmental Planning in The Netherlands: Too Good to be True – From Command-and-Control to Shared Governance*. Aldershot, UK: Ashgate Publishers Ltd.
- De Roo, G. (2010). Planning and Complexity: An introduction. In G. De Roo & Silva, E. *A Planner's Encounter with Complexity* (pp. 1-18). Franham: Ashgate.
- De Roo, G. (2014). *Planning Theory*. Lecture notes, 2014/2015 academic year.
- Evers, D., Ben-Zadok, E. & Faludi, A. (2000). The Netherlands and Florida: Two Growth Management Strategies. *International Planning Studies*, 5(1), 7-23.
- Farvacque-Vitkovic, C., Raghunath, M., Eghoff, C. & Boakye, C. (2008). *Development of the Cities of Ghana: Challenges, Priorities and Tools*. Washington, USA: Africa Region Working Paper Series, No.110. World Bank.
- Fernades, E. (2011). *Regularization of Informal Settlements in Latin America, Policy Focus Report*. Lincoln Institute of Land Policy.
- Forkuor, D. (2010). *Land allocation and its effects on the spatial planning and development of Kumasi Metropolis, A Thesis submitted to the Department of Geography and Rural Development, KNUST in partial fulfillment of the requirement of PhD*. Kumasi: Department of Geography and Rural Development, Kwame Nkrumah University of Science and Technology.
- Freiku, S. R. (2013, May 20). JICA Presents Report On Development Plan For Greater Kumasi. Ghanaian-Chronicle.com.
- Frenkel, A. D. E. O. & Jahshan, F. (2014). Methodology matters: measuring urban spatial development using alternative methods. *Environment and Planning B: Planning and Design*, 41, 3 – 23.
- Funtowicz, S.O. & Ravetz, J. R. (1991). A New Scientific Methodology for Global Environmental Issues. In C. Robert, *Ecological Economics: The Science and Management of Sustainability* (pp. 137–152). New York: Columbia University Press.
- Fuseini, I. & Kemp, J. (2015). A review of spatial planning in Ghana's socio-economic development trajectory: A sustainable development perspective. *Land Use Policy*, 47, 309–320.
- Gasiorowski, J. & Polowski, Z. F. (2014). Land Use Structure as the Basis for Indicators Determining Spatial Development of the Environment. *Environmental Studies*, 23(3), 955-960.

- Ghana News Agency. (2007). Retrieved May 25, 2015, from <http://www.ghanaweb.com/GhanaHomePage/economy/artikel.php?ID=123876>
- Ghana Statistical Service(GSS). (2012). *2010 Population and Housing Census. Summary Report of Final Results*. Accra, Ghana: Sakoa Press Limited.
- Gleeson, B. (2008). Critical commentary. Waking from the dream: an Australian perspective on urban resilience. *Urban Studies*, 45, 2653–68.
- Hammond, D. N. (2011). Harmonising Land Policy and the Law for Development in Kumasi. In K. K. Adarkwa, *Future of the Tree: Towards growth and development of Kumasi*. Kumasi: University Printing Press.
- Hartmann, T. (2012). Wicked problems and clumsy solutions: Planning as expectation management. *Planning Theory*, 11(3), 242–256; DOI: 10.1177/1473095212440427.
- Healey, P. (2006). *Collaborative Planning: shaping places in fragmented societies* (2nd ed.). New York: Houndmills.
- Healey, P. (2007). *Urban Complexity and Spatial Strategies: Towards a Relational Planning of our Times*. London and New York: Routledge.
- Hudalah, D. & Woltjer, J. (2007). Spatial Planning System in Transitional Indonesia. *International Planning Studies*, 12(3), 291-303.
- Hudson, B.M, Galloway, T.D. & Kaufman, J. L. (1979). Comparison of Current Planning Theories: Counterparts and Contradictions. *Journal of the American Planning Association*, 45(4), 387-398; DOI:10.1080/01944367908976980.
- Ichikawa, K., Okubo, N., Okubo, S. & Takeuchi, K. (2006). Transition of the satoyama landscape in the urban fringe of the Tokyo metropolitan area from 1880 to 2001. *Landscape & Urban Planning*, 78(4), 398–410.
- Ichimura, M. (2003). Urbanization, Urban Environment and Land Use: Challenges and Opportunities. *Asia-Pacific Forum for Environment and Development Expert Meeting*. Guilin, People's Republic of China.
- Innes, J. E & Booher, D.E. (1999). Consensus Building and Complex Adaptive Systems; A Framework for Evaluating Collaborative Planning. *Journal of American Planning Association*, 65(4).
- Koboe, D. & Tipple, A.G. (1995). Kumasi city profile. *Cities*, 12(4), 267-274.
- Kumasi Metropolitan Assembly. (2010). *Medium Term Development Plan*.
- Landman, K. (2004). Gated Communities in South Africa: The Challenge for Spatial Planning and Land Use Management. *The Town Planning Review*, 75(2), 151-172.
- Lwasa, S. (2014). Managing African Urbanization in the Context of Environmental Change. *Interdisciplina*, 2(2), 263-280.

- Magigi, W. & Majani, B.B.K. (2006). Community involvement in land regularization for informal settlements in Tanzania: A strategy for enhancing security of tenure in residential neighborhoods. *Habitat International*, 30, 1066–1081.
- Mensah, C. A, Acheampong, P. K. & Antwi, K. B. (2011). Living in Beehives: the growth of unauthorised structures in the Kumasi Metropolis, Ghana. *Sixth African Population Conference*.
- Mensah, C. A, Antwi, K.B & Acheampong P.K. (2013). Behavioural Dimension of the Growth of Informal Settlements in Kumasi city, Ghana. *Research on Humanities and Social Sciences*, 3(12).
- Mensah, C. A. (2014). Is Kumasi Still a Garden City? Land Use Analysis between 1980-2010. *Journal of Environment and Ecology*, 5(2).
- MEST, TCPD & JICA. (2012). *A Study on Comprehensive Urban Development Plan for Greater Kumasi, Interim Report*.
- MLGRD. (2010). *Draft National Urban Policy*. Accra: Ministry of Local Government and Rural Development, Ghana.
- Montgomery, M. R. (2008). The Urban Transformation of the Developing World. *Science*, 319(761).
- Mugenda, O.M & Mugenda, A.G. (1999). *Research Methods; Quantitative and Qualitative Approaches*. Nairobi, Kenya: African Centre for Technology Studies (ACTS) Press.
- Nwaka, G. (2005). Planning for Sustainable Cities in Africa. In Okechukwu, U. & Afoaku, O. G. (ed), *Sustainable Development in Africa. A Multifaceted Challenge*. Asmara, Eritria: Africa World Press, Inc.
- Oduro C. Y, Ocloo K. & Peprah C. (2014). Analyzing Growth Patterns of Greater Kumasi Metropolitan Area, Using GIS and Multiple Regression Techniques. *Journal of Sustainable Development*, 7(5).
- Owusu-Ansah, J. K. (2015). The influences of land use and sanitation infrastructure on flooding in Kumasi, Ghana. *GeoJournal*, DOI 10.1007/s10708-015-9636-4.
- Portugali, J. (2006). Complexity theory as a link between space and place. *Environment and Planning A*, 38, 647-664.
- Quarcoopome, S. S. (1993). A history of the urban development of Accra: 1877-1957. *Research Review*, 9(1-2), 20-32.
- Ran Wei, A. T M. & Grubestic T. H. (2014). An approach for examining alternatives attributable to locational uncertainty. *Environment and Planning B: Planning and Design*, 41, 93 – 109.
- Rauws, W. S, Cook, M. & van Dijk, T. (2014). How to Make Development Plans Suitable for Volatile Context. *Planning Practice & Research*, 29(2), 133-151.
- Rauws, W.S & de Roo, G. (2011). Exploring Transitions in the Peri-Urban Area. *Planning Theory & Practice*, 12(2), 269–284.

- Rittel, H. (1972). *On the Planning Crisis: Systems Analysis of the First and Second Generations*. Berkeley: University of California.
- Rittel, H.W.J. & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4, 155-169.
- Rotmans, J., Kemp, R. & van Asselt, M. (2001). More Evolution than Revolution: Transition Management in Public Policy. *Foresight*, 3(1), 15-32.
- Roy, A. (2005). Urban Informality: Toward an Epistemology of Planning. *Journal of the American Planning Association*, 71(2), 147-158, DOI:10.1080/01944360508976689.
- Styczynski, A., Wolf, J., Tah, S. & Bose, A. (2014). When decision-making processes fail: an argument for robust climate adaptation planning in the face of uncertainty. *Springer Science+Business Media*.
- Wadhawan, V. (2013). *Understanding Natural Phenomena*. Retrieved December 18, 2014, from <http://vinodwadhawan.blogspot.in/2012/07/38-complex-adaptive-systems.html>
- Wiechmann, T. (2007). Planning and Adaptation -Strategising in Complex Contexts as Dealing with Social Paradoxes. *New Concepts and Approaches for Urban and Regional Planning*. Universität Leuven.
- Wilkinson, C. (2011). Strategic navigation: in search of an adaptable mode of strategic spatial planning practice. *Town Planning Research*, 82(5), 595-613.
- Winayantia, L. & Lang, H. C. (2004). Provision of urban services in an informal settlement: a case study of Kampung Penas Tanggul, Jakarta. *Habitat International*, 28, 41-65.
- Yin, R. (1994). *Case Study Research: Design and Methods*. London: Sage Publications.
- Zhang, S., de Roo, G. & van Dijk, T. (2015). Urban land changes as the interaction between self-organization and institutions. *Planning Practice & Research*, 30(2), 160-178, DOI: 10.1080/02697459.2015.1014226.
- Zhao, P. (2011). Managing urban growth in a transforming China: Evidence from Beijing. *Land Use Policy*, 28, 96-109.
- Zhao, P., Lu, B. & Woltjer, J. (2009). Growth management and decentralization, An assessment of urban containment policies in Beijing in the 1990s. *IDPR*, 31(1).

**APPENDICES**  
**RESEARCH QUESTIONNAIRE FOR PLANNING INSTITUTIONS**

Name of Institution: .....

Date of Interview: .....

**A. Forward Planning**

1. Does this Department have any policy and/or guidelines (eg Zoning) for determining how physical development should proceed? (Yes/No)

a) If yes, what are these policies and the considerations?

.....  
.....  
.....

b) If no, why?

.....  
.....

c) Are you aware of reality in terms of development evolving in a non-linear manner?

.....  
.....

If yes, how do you cope in such circumstances?

.....  
.....

2. Do you have reason to believe existing provision for physical development in the Kumasi Metropolis is inadequate? (Yes/No/Don't Know)

a) If yes, please explain

.....  
.....  
.....

b) If no, please explain

.....  
.....  
.....

3. In what ways do you involve residents of informal settlements in spatial planning of the Metropolis?

.....  
.....  
.....

4. Do residents of informal settlements take any initiatives (self-organizing process) to help? Eg building toilets, creating access routes etc

.....  
.....  
.....

a) If yes, how do you support that?

.....  
.....

b) If no, was this because of:

- Lack of expectation/requirement to do so
- Lack of resources
- Don't know
- Any other

**B. Managing Development**

5. Can you quantify the number of application for development that have been approved or rejected since 2000 in KMA (Yes/No/Don't Know)

a) If yes, how many?

.....  
.....  
.....

6. Do you have a map showing the current spatial development pattern in the Metropolis? (Yes/No).If yes, could you please provide a copy? It could also be aerial photographs

7. In assessing applications for development permits, what issues are generally addressed by conditions?

.....  
.....  
.....

8. From a planning standpoint, what do you think are the perceived problems with blue print plans?

.....  
.....  
.....

9. What in your view is the reason why spatial developments are being carried out which do not conform to the official schemes? (E.g. lack of enforcement of zoning regulations, inadequate resources to monitor etc)

.....  
.....  
.....  
10. Do you have any suggestions or recommendations on how to approach spatial planning in view of the haphazard developments? Eg informal settlements

.....  
.....  
.....  
11. ANY OTHER COMMENTS

The Local Government Act (462) mandates this Department to demolish illegal buildings, however, in practice this doesn't happen. What do you think is the reason?

The following maps of KMA if they can be made available in GIS format will be appreciated

- ✓ Structure plan of KMA
- ✓ Local plans of three neighbourhoods preferable Ayeduase or any peri-urban area