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SELF-ORGANISATION IN INFORMAL SETTLEMENTS:

A CASE STUDY OF THE GREATER ACCRA METROPOLITAN AREA, GHANA.

A dissertation submitted to the University of Groningen in partial fulfilment of the requirement for the award of a Master of Science Degree in Infrastructure and Environmental Planning.

By

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ABSTRACT

The growing interest among spatial planners to see spontaneous behaviours supporting urban development makes it necessary to consider the phenomenon of self-organisation. Self-organisation can be a solution to complex planning issues hardly solved by rational planning. This thesis explores the phenomenon of self-organisation in informal settlements which positively contributes to urban development based on three case studies in the Greater Accra Metropolitan Area, Ghana. Three theories of self-organization, i.e., dissipative structures, synergetics and autopoietic are used to analyse the case studies. The research reveals that actors in these informal settlements are triggered by certain contextual factors to undertake initiatives for their own survival and sustenance. At the regional level, these neighbourhoods jointly form patterns relating to self-organisation. I argue that since self-organising behaviours of actors are context specific, the planning approach should also be situation specific. Planning regulations should be flexible or reconstructed to accommodate the actions of the independent actors in the urban environment.

Key Words: *Self-organisation, informal settlements, planning regulations, Greater Accra Metropolitan Area.*

TABLE OF CONTENT

Contents	Page
ACKNOWLEDGEMENT.....	I
ABSTRACT.....	II
TABLE OF CONTENT.....	III
LIST OF TABLES.....	VI
LIST OF FIGURES.....	VII
LIST OF ACRONYMS.....	VIII
CHAPTER ONE: BACKGROUND OF THE STUDY	
1.1 Introduction.....	1
1.2 Self-organisation and Urban Planning.....	1
1.2.1 Research Questions.....	5
1.3 Research Methodology.....	6
1.3.1 Participants and Methods of Data Collection.....	7
1.3.2 Data Analysis.....	8
1.4 Research Theory and Structure	8
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction.....	10
2.2 Self-organisation.....	10
2.2.1 Dissipative Structure.....	12
2.2.2 Synergetic.....	13
2.2.3 Autopoietic.....	14
2.3 Key Features of Self-organisation.....	15
2.4 Self-organisation and Planning.....	16
2.5 Placing Self-organisation on the ‘holy spectrum’.....	18

4.5.1 Self-governance or self-regulation in Planning.....	21
2.6 Conceptual Framework.....	22
2.7 Conclusion.....	23
CHAPTER THREE: BACKGROUND STUDY ON INFORMAL SETTLEMENTS IN GHANA	
3.1 Introduction.....	24
3.2 Planning System in Ghana.....	24
3.3 Land Tenure System in Ghana and Accra.....	27
3.3.1 The Market- Based Approach.....	27
3.3.2 The Right –Based Approach.....	28
3.4 Profile of Selected Communities.....	29
3.4.1 Old Fadama/Agbogbloshie.....	29
3.4.2 Chokor.....	30
3.4.3 Amui Dzor.....	31
3.5 Conclusion.....	32
CHPATER FOUR: CASE STUDY ANALYSES	
4.1 Introduction.....	33
4.2 Case Studies.....	33
4.2.1 Old Fadama/Agbogbloshie - Slum Union of Ghana.....	34
4.2.2 Amui Dzor - Social Housing Project.....	41
4.2.3 Chokor - Sanitary Facility.....	48
4.3 Discussion on Case Studies.....	53
CHAPTER FIVE: SUMMARY AND CONCLUSION	
5.1 Introduction.....	58
5.2 Summary of Findings.....	58
5.3 Recommendation for Spatial Planners in Ghana.....	59

5.4 Future Research.....	61
BIBLIOGRAPHY.....	62
APPENDICES.....	66

LIST OF TABLES

Table 1.1 Selected Cases.....	6
Table 2.2 Summary of Features of Self-organisation.....	16

LIST OF FIGURES

Figure 1.1 Framework of Planning Oriented Action.....	1
Figure 1.2 Research Structure.....	9
Figure 2.1 Top view of a liquid in a circular vessel showing Hexagonal Pattern.....	10
Figure 2.2 Swarm Intelligence.....	11
Figure 2.3 Spectra of Function and Structure.....	20
Figure 2.4 Conceptual Framework.....	22
Figure 3.1 Location of Old Fadama/Agbogbloshie in the Accra Metropolitan Assembly.....	30
Figure 3.2 Location of Chokor in the Accra Metropolitan Assembly.....	31
Figure 3.3 Location of Amui Dzor in the Ashaiman Municipality.....	32
Figure 4.1 Office of the Slum Union of Ghana.....	35
Figure 4.2 The Pilot Project (Wooden Structure) and Transitional Housing.....	41
Figure 4.3 Amui Dzor Housing Project and Public toilet.....	42
Figure 4.4 Chokor Toilet and Bath Facility and Pipe Water System.....	49
Figure 4.4 Hand Washing Facilities and Pipe water extension.....	49

LIST OF ACRONYMS

AMA	Accra Metropolitan Assembly
DACF	District Assembly Common Fund
DMTDP	District Medium-Term Development Plan
GPRS I	Ghana Poverty Reduction Strategy I
GPRS II	Growth and Poverty Reduction Strategy II
GSGDA	Ghana Shared Growth and Development Agenda
MLRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal and District Assemblies
NDPC	National Development Planning Commission
OA	Old Fadama/Agbogbloshie
SDP	Spatial Development Plans

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1 Introduction

“As the world moves into the urban age, the dynamism and intense vitality of cities become even more prominent. A fresh future is taking shape, with urban areas around the world becoming not just the dominant form of habitat for humankind, but also the engine-rooms of human development as a whole” (UN, 2013, p. 3).

Spatial Planners are therefore challenged with complex planning problems. One challenge is the self-organizing character of cities and their evolution in time.

At the turn of the millennium, developing cities tend to be characterized with “... chaotic and discontinuous spatial patterns and rapid and unorganized development process” (Barros & Sobreira, 2002, p. 1). Though this occurs as a result of the self-organising nature of cities, self-organisation still contributes in solving the many urban problems (Turner, 1988).

In this respect, this study relates the concept of self-organisation to informal settlements in order to uncover the initiatives taken by these settlements – which emerged mainly through the processes of self-organisation, how these initiatives contribute to urban planning and development, and the implications for spatial planning.

1.2 Self-organisation and Urban Planning

The 1990s has witness a remarkable shift both in planning theory and practice (Allmendinger, 2009). Fundamentally, this shift involved the acceptance of a belief system that incorporated the idea that uncertainty exists within planning processes. This development widened the scope of options for planners and both planning practice and theory incorporated approaches that are based on “inter-subjective communication and collaboration” (De Roo, 2010). Planners no longer solely seek certainty or the means to maximise planning goals, they instead act as advocates (Advocacy Planning by Davidoff in Allmendinger, 2009) and facilitators for actors involved in the planning process in order to optimise their interest (Woltjer, 2000). This signifies a shift from direct control towards *self-regulating* (De Roo, 2010). Figure 1.1 relates the various shifts in planning theory. The form of relationship is showed as a spectrum between a fully

centralised structure (i.e. ‘central guidance’) and decentralised structure (i.e. ‘participative interaction’).

In Ghana, various attempts have been made since the 1990s to involve citizens in spatial development processes, and collaboration and participation is advocated between government agencies, civic organizations (NGOs,) or between citizens at the grass root level as a multi-actor approach to planning (NDPC, 2006). In the quest of promoting a multi-actor approach to planning, the government of Ghana under the Local Government Act 1993 (Act 462) decentralised the planning and decision making authority to various Metropolitan, Municipal and District Assemblies (MMDAs). Three main reasons (social, spatial and political) have been put forward for citizen involvement in planning under the local government Act.

Firstly, it is expected that citizen involvement will contribute to social cohesion at the grassroots level in a country of multitude tribes and varied social structures (NDPC, 2006).

Secondly, in terms of spatial development, it is the responsibility of the MMDAs to ensure the development, improvement and management of human settlements and the environment in the district (LG Act 462, 1993). It is expected that active and involved citizens will contribute to improving the spatial quality of their working and living environments as well as furthering a sense of belongingness.

Thirdly, the government seeks to bridge the gap between government agencies and citizens. Participation could help to bridge this gap, since it brings government and citizens and civil society groups together to deliberate on development during public hearings (NDPC, 2006). This enhances civic support for public policies while also promoting accountability.

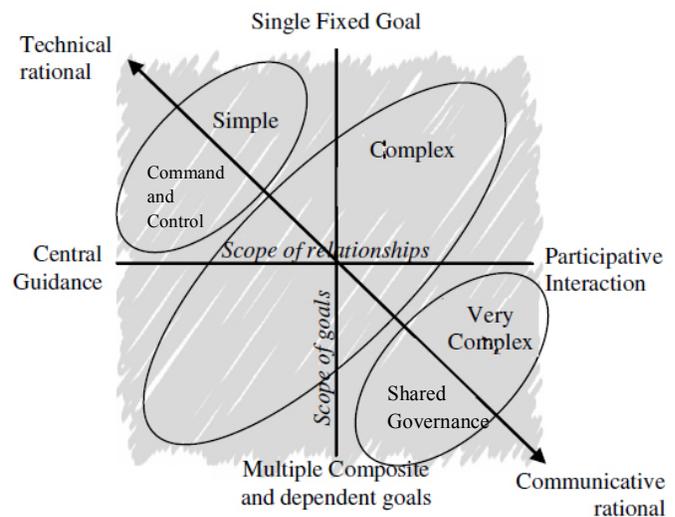


Figure 1.1: A Framework for Planning Oriented action, in which the relationship between planning and Interaction is based on complexity; by De Roo, 2003; seen in Zuidema, 2013

These arguments reflect the motive of Ghana's decentralized planning system giving its emphasis on public participation with its associated participatory requirements in the formulation of District Medium Term Development Plans (DMTDPs) in particular and the local development process at large.

However, after two decades of decentralized planning in Ghana, there is little to show for the involvement of the grass root in development planning evidenced by the abandonment of completed District Assembly Common Fund¹ Projects (DACF) in several communities in protest by community members against their suitability. For instance, Abbey et al., (2010) reported in a World Bank study of the DACF that most people affected by project outcomes are not involved in the planning and implementation process.

This notwithstanding, Flyvbjerg (1996) noted that planners are usually civil servants who work under the authority of government and serve government interest at the expense of the public. Therefore, government objectives still lead participatory spatial planning processes. He further attested that, the communicative planning theory fails to capture the role of power in planning and this makes it weak to serve as the basis for effective action and change (Flyvbjerg and Richardson, 2002) Similarly, Woltjer (in Boonstra and Boelens, 2011) opined that interactive planning is more like 'a support machine' to validate the decisions already taken by public administrators in an uncertain society.

The above criticisms and weaknesses of interactive, collaborative and participatory planning prompted Boonstra and Boelens to introduce the notion of self-organisation "which rests on the idea that society is not the result of one – governmental – perspective only, but of an endless variety of elements, with all their diversity and dynamics" (Boonstra and Boelens, 2011, p.103).

Self-organisation is one positive feature of complex systems. It is a spontaneous emergence of global structure out of local interactions, independent from external forces (Portugali, 2000; Heylighen, 2008). This implies, under dynamic interaction with its

¹ The DACF is the total allocation of the fund, 10 % of the total annual revenues of Ghana which is shared among the various MMDAs for the implementation of their MTDPs.

environment, and interrelation between its internal elements, complex systems could manage themselves in a process of self-organisation, to create a new emergence structure.

Boonstra and Boelens (2011) differentiated between collaborative participation and self-organisation. Collaborative participation is the involvement of community in planning processes initiated by government, whose objectives and participatory procedures are already predefined by the government. While in self-organisation the initiatives are taken by community members themselves or in collaboration with NGOs independent of government policies. Thus, self-organisation in urban development means the “bottom-up initiatives for spatial interventions that originate in civil society itself, via autonomous community-based networks of citizens, outside government control.” (ibid; p.113).

In Ghana, due to the inadequacy of the DACF and the inconsistencies associated with its distribution (Kessey, 1995) coupled with the weaknesses of government participatory planning consequently, community members have embarked on several innovative initiatives to meet their basic needs and improve their living standards.

This research seeks to explore the phenomena of self-organisation, especially in informal settlements in order to ascertain the extent this phenomena could be seen as strength and a solution to urban problems and the institutional interventions that stimulate or constraints this process.

Despite the increasing scholarly efforts in elucidating self-organisation in communities (Boonstra and Boelens, 2011; Hidayatu, 2013), there is scarce academic work that explores self-organisation within informal settlements and the implication for spatial planning. It is regrettable since it is this sort of studies that can contribute to our understanding of how these settlements – mostly deprived communities, internally support itself in the society, and the required institutional interventions to implement. In an attempt to fill this lacuna therefore, the study seeks;

- To give more insight on the phenomena of self-organisation in informal settlements in Ghana
- To ascertain the contributions of self-organisation process within informal settlements to urban development

- To draw implications for spatial planning

1.2.1 Research Questions

To be able to achieve the above objectives, the research would provide answers to the following question;

- How is self-organisation manifested within informal settlements in Ghanaian cities?
- How does it affect urban planning and development?
- What implications can be drawn for spatial planning?

These research questions are based on both theoretical and contextual rationales. On the theoretical side, the main rationale emanates from Complexity Sciences. These assume that under dynamic relation with its environment and dynamic interrelation between the elements, complex systems could manage themselves in a process of self-organisation, to create new emergence structure. These phenomena of self-organisation also tend exist in urban area. “Such systems exhibit also phenomena of nonlinearity, instability, fractal structures and chaos – phenomena which are intimately related to general sensation of life and urbanism at the end of the 20th century” (Portugali, 2000, p.49). It is therefore necessary to ascertain the self - organizing nature of informal settlements and how that supports urban planning and development.

From the above research questions, a hypothesis is developed which would be elucidated as part of the answers;

Hypothesis 1 – self-organisation in informal settlements can serve as an opportunity to urban development.

In developing cities, the phenomenon of self-organisation is seen as an impediment to urban development because informal settlements emerge through this process. However, there are several researches on self-organisation (in developing cities) which show that even squatter settlement can be seen as an alternative solution, rather than a problem for the housing deficit

(Turner, 1988; Barros & Sobreira, 2002). This thesis would seek to unravel the positive aspects of self-organisation in three informal settlements in Ghana.

1.3 Research Methodology

This study seeks to understand the phenomenon of self-organisation in informal settlements. However, studying self-organisation by dissociating it from its real life context is virtually impossible since it assumes different levels depending on a specific context. Therefore, in order to gain an understanding of the phenomenon, it becomes imperative to deeply investigate and develop an explanation of the phenomenon in relation to its real-life context. For such kind of research *case study* is most appropriate (Yin, 1994). Three case studies are therefore used in this research to gain more understanding about the phenomena under study. The candidate cases are shown in Table 1.1.

Table 1.1 Selected Cases

Community	Land Tenure Security/ Level of Tenability	Stage of Formation by Length of Years
Old Fadama/ Agbogbloshie	Insecure ²	Matured ³
Chorkor	Secure ⁴	Matured
Amui Dzor	insecure	Matured

Source: Authors' Construct 2013

As shown in Table 1.1 above, informal settlements in the Greater Accra Metropolitan Area have been grouped according to tenure security and stage of formation. Issues of tenure security tend to influence government decisions either to demolish or intervene in the infrastructural development in the settlements. The case of Old Fadama/Agbogloshie would therefore serve as the basis for assessing government policies and/ or actions for insecure settlements.

² Insecure slums are squatter settlements which are liable to demolition by government.

³ Mature slums usually have access to some basic services but typically have a high challenge of community and household levels of overcrowding

⁴ Secure slums have formally recognized ownership, however, most of these settlers may not have documentation for their lands due to the properties being handed over from generation to generation
This categorization is adapted from the UN-Habitat for a better urban future (2011)

These three case studies are chosen based on the following criteria;

- a) *The self-organisation processes should have resulted substantial effects (positive or negative) in the settlements or between the settlement and planning institutions, in terms of infrastructure development or negotiations and also;*
- b) *The very characteristics of the phenomenon under investigation have also influenced their selection.*

Qualitative method of data collection is used in data collection and analysis in order to get detailed understanding of each case study. Inferring from Gaber (1993, cited in Hidayanti, 2013), qualitative method better denotes ‘real-life activities’ of the context under study. Thus, since human beings and institutions are the actors in these self-organisation processes, it is important to understand the process of self-organisation within the selected settlements from their perspective, as they are the key actors involved. This can reduce bias and distortion of information if collected from secondary sources.

However, in the Ghanaian context, ambiguity is one of the deeply rooted cultural elements. What is most challenging is the unwillingness of government institutions to release relevant information. This reality on the ground prompted the use of triangulation – the use of various methods and data sources. This method ensured that data collected could be cross-checked to denote their validity. This saved me from being biased towards one method with its innate weaknesses (see Babbie 1995:106).

1.3.1 Participants and Methods of Data Collection

The study collected both primary and secondary data. This was necessary since both supplement each other in research. Primary data was collected through interviews, Focus Group Discussions, observation and photography (see appendix for cited interviews). I used different methods of data collection to help validate the responses. The study conducted 18 structured interviews using questionnaires; including 12 community members, 3 executives of the Slum Union of Ghana, 2 Town and Country Planning Officers and the Manager of Peoples Dialogued on Human Settlement an NGO in the Greater Accra Metropolitan Area. I conducted 3 FGDs consisting of 4 members each in the various communities.

Also, the study compiled secondary data on informal settlements in Ghana and used it to support the empirical data. Secondary data reviewed include books, academic journals and course work notes and articles.

1.3.2 Data Analysis

I transcribed the recordings of all my interviews and FGDs. This helped me edit data and carry out follow-ups when necessary.

The historical trend of development of each case study (inferring from Rotman's phases on transition process; Rotman et al., 2001) was developed based on its emergence, development and stabilisation which are explained in Chapter four (4). The output of the historical analysis informed the theoretical analysis of the study. This relates each case study to the three (3) theories of self- organisation discussed in Chapter two (2).

1.4 Research Theory and Structure

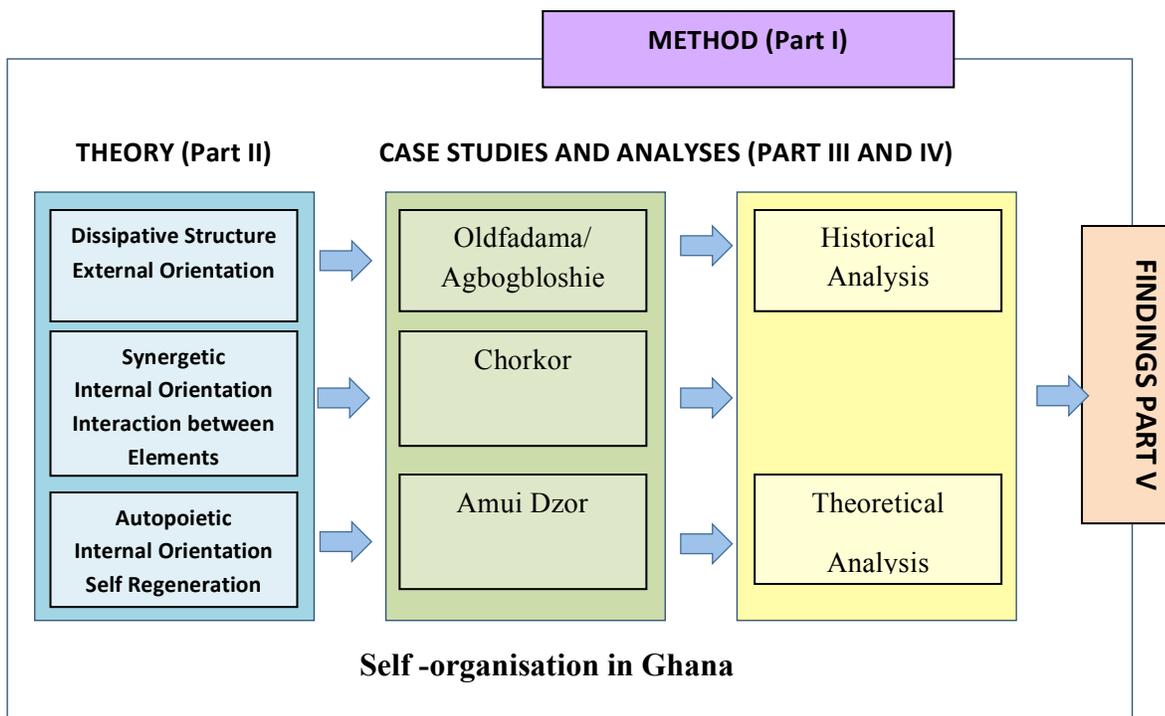
The theoretical underpinning of this research is self- organisation. Theories of Ilya Prigogine's dissipative structures, Hermann Haken's synergetics, and Humberto Maturana's autopoiesis would be used to discuss the phenomenon of self -organisation within informal settlements in Ghana.

These three theories share the same philosophical concept of self-organisation but with different emphasis. Thus, the varied emphasis of these theories would be used in explaining and understanding the case studies in this research. The theory of dissipative structure is used to explain the external orientation of informal settlements – in terms of the relation and interaction (both spatial and aspatial) between these settlements and their external environment. Institutional interventions would also be discussed. Synergetics theory is used to explore internal interaction and interrelation between community members. Autopoietic theory is used to explain the internal orientation of the informal settlements, in terms of regeneration of ideas, ideas and decisions geared towards the improvement of the settlement.

The research is presented in five main chapters. The current chapter (1) is introductory and presents the contextual background, of this thesis and the research methodology. Chapter two highlights the theoretical concepts of the research and presents literature on the theory of

self-organisation and planning. The third chapter presents the profile of the selected informal settlements in Ghana with emphasis on the institutional rules and policies for spatial development. Chapter four builds on the discussion in chapter two and three by analysing the self-organising behaviours in informal settlements. The chapter further establishes a link between the theoretical discussions in chapter two and the behaviours of actors in the settlements. Chapter five summarizes the major findings from the study and recommends areas for further research. The theoretical framework and the flow of this research are illustrated in figure 1.2.

Figure 1.2 Research Structure



Source: Authors' Construct, 2014

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Complex systems are characterized by non-linearity, co-evolution, and self-organisation. These systems consist of many elements, and relation between the elements is characterized by *non-linear* interaction – the elements change under certain conditions and time which makes the system evolves randomly and in an unpredictable manner. Co-evolution explains how systems change through time because of mutual influence. The emphasis here is on the development of the system as a whole, in which actors make up just one of the many factors influencing the process (Teisman et al., 2009). Self-organisation is characterized in complexity theory as “the spontaneous development of new structures as a result of feedback and feedforward mechanisms” (De Roo, p. 30). Self-organisation is also related to the action of elements and systems on their own; “the system self-organizes its internal structure independent of external causes” (Portugali, 2000). The idea of self -organisation forms the theoretical base of this research. This chapter will briefly explore the concept of self-organisation and relate it to urban planning. The theories of Ilya Prigogine’s dissipative structures, Hermann Haken’s synergetics, and Humberto Maturana’s autopoietic are discussed which would be used in the case study analyses.

2.2 Self-organisation

The concept of self-organisation can be understood by observing Henri Benard’s experiment on heated water (see also Portugali, 2000). At the beginning of the process, when the temperature difference between the heated bottom and the cool top is low, the heat is being transferred by conduction but no macro-motion can be observed in the liquid at this stage. However, as the temperature increases, an irregular motion of liquid occurs which after

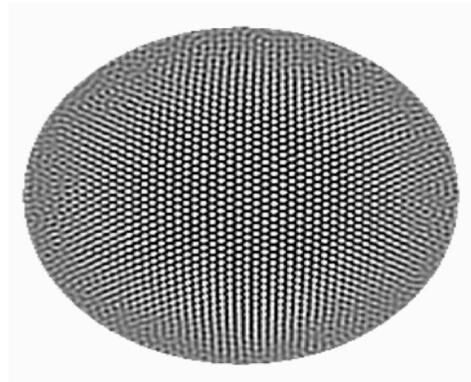


Fig. 2.1 Top view of a liquid in a circular vessel showing Hexagonal Pattern (from Haken 1996) Source: <http://metaphysics.org>

sometime exhibit a clear ‘macro-movement’ and forms a ‘hexagonal pattern’ just like honey comb cells as shown in figure 2.1.



Figure 2.2 Swarm Intelligence
source: <http://ohm-horschedule.de>

Self-organisation also manifest in our natural environment, for example the swarm intelligence; in trail-formation and wall-building by ant colony (Bonabeau et al., 1999), in flock of birds, in school of fishes (Parrish & Viscido, 2005 in Hidayatu, 2013).

According to Bonabeau et al., (1999) mechanisms of self- organisation identified in swarm’s behaviour are: multiple interactions among the individuals; positive and negative feedback; and increased behavioural modification.

Some social behaviour of humans is sometimes self-organised and generates complex societal behaviours. Human beings naturally work with local information and through local direct or indirect interactions producing complex societies. In the city, self-organisation manifest in the repetitive behaviour of agents as they adjust to reach a better fit within the system. This often leads to a collective results and a spontaneous emergence of pattern formation. A classic example is the emergence of elephant paths (De Roo, 2014), and spontaneous settlements in most developing countries (Barros and Sobreina, 2002).

Benard’s experiment reveals certain characters of self-organisation (Portugali, 2011). Self-organisation generates a new structure and maintains it (In ‘t Veld et al., 1991 cited in Teisman et al 2009). Also, a system with the movement of energy within it can generate new behavioral patterns. Therefore, self-organisation exhibits a creative and adaptive feature that can trigger changes in a self-organising unit (Teisman et al., 2009). In this regard, self-organisation is considered to be a bottom up approach and the initiating factor triggering process might very well be contextual (De Roo, 2014). Finally, a self-organising system constitutes a variety of numerous elements with a causal relationship between them. “These elements are interconnected

through a complex network of feedback and feedforward loops. This feature makes the complex system robust and flexible at the same time” (De Roo, 2010, p. 30).

Inferring from the above, it can be concluded that self-organising systems are not guided by the external forces, but by the internal forces and interactions within the larger system (city, community) and what the system has to do in order to survive. This is further attested to by De Roo (2010, p, 30) who stated, “the complex system does not just develop randomly but is path-dependent, i.e., development takes place under certain conditions that can be defined and that provide insight into the system and its development”.

Several concepts on complex systems emphasis that systems are spontaneous in nature – they are self-organising. However, there are different views in the various branches of complexity theory on the extent of spontaneity of this self-organisation. The next section elaborates this.

2.2.1 Dissipative Structure

Dissipative structures stress on the core structures of system that does not cease to function when the system breaks down, but has the potential to constitute a new order. This makes it a self-referencing process (Mitleton-Kelly, 2003).

The concept ‘dissipative structure’ basically refers to the result of self-organizing process in the system. The theory of dissipative structures was used by Prigogine’s (Prigogine and Stengers, 1984) in thermodynamics. He related an open system, which exchanges energy and matter with its environment, to a closed system which exchanges neither energy nor matter with its environment. Prigogine realized that systems (such as Benard cells) “continuously generate entropy, but this entropy is actively dissipated, or exported out of the system. Therefore, it manages to increase its own organization at the expense of the order in the environment.” (Heylighen, 2001, p. 254). Dissipative therefore explains the fact that “the system consume energy and ‘dissipate’ it into the environment” (Cleveland, 1994, p. 3).

Allan and co-workers (in Portugali, 2011) in a series of studies have reformulated the static central place theory of Christaller based on Prigogine’s dissipative structures. Allan’s model establishes the functional relationship between infrastructure of localities in a region, with

its residents and jobs or economic areas. The actors in this model represent the individuals who migrate in order to get jobs, and employers who employ or layoff workers as result of market conditions. “The interaction between localities and the introduction and extraction of economic activities (i.e. employment opportunities), create for each locality a kind of local “carrying capacity” and for the system as a whole nonlinearities and feedback loops which link population growth and manufacturing activities” (Portugali, 2011, p 58).

Relating Allan’s model to dissipative structure, the result is the emergence of central places since the areas with greater and higher order employment opportunities will attract more people. This could in turn lead to crowding population at central places thereby forcing others to seek shelter informally as in the cases of the selected informal settlements.

Concluding from the above, the main features of self-organising systems in the concept of dissipative structures are; its interaction with the environment, with feedback and feedforward mechanisms, and its far from equilibrium state which makes the system dynamic and sensitive to external influences; small changes in the components of the system can result in large changes.

2.2.2 Synergetics

Synergetic is “the working together of many parts, individuals, subsystems, groups” (Portugali, 201, p.60). It highlights cooperation and the interrelations between individuals and how they interact to form synergy among the different sections of the society and its overall structure and behaviour (ibid).

Haken’s experiment on the laser exhibits a feature of self-organisation. Haken pumped electric current through a gas discharge lamp, atoms move irregularly without any pattern. As the electric current is increased, the atoms correlate their movement and start to oscillate in self-organised way, and finally discharge a coherent light wave, known as laser light.

“Initially, the atoms emit their light waves independently of each other. Each of these might get support from the other excited atoms. In this way a kind of a competition among the light waves for the energy resources of the excited atoms begins. The winning light wave describes and prescribes the order in the laser and it’s thus called the order parameter. It enslaves the others to act in the same way and it’s called the slaving principle” (Portugali, 2011, p 62).

In the context of the city the individual who migrates in search for accommodation or jobs has to adapt to the city's dynamics. He therefore becomes enslaved by the city's '*order parameter*'. But by adapting to the city's environment, the individual either supports or rejects the order parameter of the city. This is known as circular causality (Portugali, 2011). However, the enslavement process is not 'command and control' "but the 'enslaved' also gives feedback in form of support or rejection to the order parameter" (Hidayattu, 2013,p.18).

Another important feature of Hakens theory is the control parameter - which is the power input in the case of the laser. The control parameter can be seen as an external influence on the system which potentially makes the system oscillate and self-organise itself.

Relating Haken's concept of synergetic to the city, the "parts" of the system can be seen as the individuals, households, formal and informal groups. Influenced by certain control parameter such rules and regulations of the government, which generates an "order parameter" that enslaves the behaviour of the agents (Portugali, 2006).

2.2.3 Autopoiesis

The theory of self-organisation is highlighted in the concept of autopoiesis, which says that systems can regenerate and recreate themselves (In 't Veld et al., 1991 cited in Teisman et al., 2009). "Systems are thus self-regenerating enclosed structures, whose mechanisms are interconnected and mutually dependent" (Teisman et al., 2009, p 27).

The core idea of autopoiesis is that the interaction between different components of a system may generate or re-generate other elements needed in the system, without any external influence. This "interaction is always determined by an organizationally closed system of production relationships" (Twist and Schaap, 1991: 32 in Teisman et al., 2009, p27). However, this does not mean that autopoietic system is a closed system. It implies "systems have a certain degree of self-containment and closure to their environment. They adapt to their environment but do so with properties and characteristics that are created and sustained in the system itself" (Teisman, et al., 2009, p.27). In other words, external events may trigger internal processes but they cannot determine those processes.

Relating autopoietic self-organisation to human settlements, it implies the inward orientations of these settlements, is about self- regeneration and self-maintenance of the institutions which have been established in the process of self-organisation.

Also, in 1986, Niklas Luhmann used the theory of Autopoiesis to explain social systems. He observed that, interactions are “systems which reproduce themselves on the basis of communication.” (Seidl, 2004, p. 14; in Hidayattu, 2013). The emphasis here is on the quality of communication as humans interact. Also, Luhmann modelled “organizations as social systems which reproduce themselves on the basis of decisions.” (Seidl, 2004, p. 15 in Hidayattu, 2013). He explained that communication and interaction between social systems could be seen as a learning process which might reproduce society.

2.3 Key Features of Self-organisation

- Self-organisation happens in open and complex system (Haken, 1978; Prigogine & Stengers, 1984; Portugali, 2000). This implies that the system consists of many elements which interact and are interconnected with each other and continuously change information with its environment.
- Self-organisation is a spontaneous process with feedback and feedforward mechanisms.

It is spontaneous because of the sudden impulse or inclination of actions without premeditation or external stimulus. The feedback mechanism helps the system to gain from its environment while also influencing the environment. This makes the system robust and flexible. However, the system does not develop randomly, but development occurs under certain conditions that can be identified and that inform the system and its development (De Roo, 2010).

- New structures develop as result of the interrelationship between elements of the system and between the system and its environment (Haken, 1978; Heylighen, 2001).

Table 2.2 Summary of Features of Self-organisation

Dimensions	Features	Related Concepts
Preconditions of self-organisation	Open complex system	Dissipative structures
Why does system self-organise	To cope with changes from both internal structure and outside environment	Synergistic, Adaptive capacity
Importance of Self-organisation	Formation of global structures due to local interactions , in which no dominant organizing agent	Emergence, Uncertainty
How self-organisation works	Feedback (positive and negative), interactions between scale	Non-Linearity
Barriers or opportunities	Is not free-organized but can be constrained or stimulated by various factors	Institutions

Source: Adapted From Rauws and Zhang, 2012

2.4 Self-organisation and Planning

The study of self-organisation in social science has the same basic principle with other science, except in the character of the elements of the system. The actors in social self-organisation anticipate, plan and respond to their environmental conditions. This makes actors in complex social systems reflexive and enhances their adaptive capacity. Actors also process information within themselves which influences their actions. In field of planning, this implies actors can rationally select, based on certain limit of freedom, a certain response or action to a certain situation. As a result, learning and dynamic actors constantly influence the direction of the system (Teisman et al., 2009).

This social character of self-organisation makes it more important in planning. As such, several planning theorists have tried to enhance the use of self-organisation in planning, by proposing relatively new approaches in planning, emphasizing differently in terms of the content, process and procedural (Hidayatu, 2014).

However, inferring from the conception of cities as self-organising systems, the question is; how should contemporary urban and spatial planning institutions adapt to or regulate these urban dynamics in order to cope with the self-organisation processes in the city?

In his publication, Portugali (2006) stated that considering the nature of the city as an open, complex and self-organising system, local plans would be effective in shaping the city. This idea was established using the cityscape Tel Aviv (1950s) where the action of one resident to enlarge his/her apartment by closing the balcony influenced the actions of the other residents in same direction. He thus, concluded that, bottom-up planning should be encouraged to provide room for local initiatives and innovations, and encourage public involvement in planning above and beyond what is given them through the present political process.

Again, in a recent publication, Portugali (2011) contended that self-organisation could be encouraged in planning, when no standard plan is stipulated in planning, except a set of regulatory planning principle that coordinates and manages relations and interactions between physical elements of urban area. He termed this approach ‘just-in-time’ planning, as contrary to ‘just-in-case’ planning (Alfasi and Portugali, 2004).

Just-in-case planning is based on traditional mode of planning where the city is seen as machine that has to be planned in detail. This type of planning dominates current planning practices in the provision of societal needs such as housing. “Just-in-case planning stands for a rigid, vertical-hierarchical structure, requiring workers to specialize, thus leading, possibly, to antagonism between workers and management.” (Alfasi & Portugali, 2004, p. 31).

Just-in-time planning on the other hand, suggested that “instead of using legal long-term land use plans, planning authorities should use rules referring to qualitative relations between different activities and functions in the environment” (Alfasi & Portugali, 2004, p. 32). In this situation, the city is always under construction to respond to current societal needs and opportunities.

Boonstra and Boelens, (2011) proposed that self-organised planning approach be “*outside-in*” instead of the dominant “*inside-out*” approach where planning actions are mainly derive by government and its institutions. It implies that planners adopt an “*open, unbiased and un (pre) structured* view” to deal with upcoming socio-spatial initiatives ‘on the outside’. In

support, Fressen (2007; in Boonstra and Boelens, 2011) argued that institutional arrangement that allow “*non-predefined relations*” should be promoted. Thus, both the planner and the planned should from the outset be mutually engaged in the planning process.

2.5 Placing Self-organisation on the ‘holy spectrum’

The above sections highlighted self-organisation as a concept and its associated features. This centres on how processes begin within a community, develop and change over time. It is thus, more closely related to the actions and initiatives of elements and systems on their own (Teisman et al., 2009).

However, “self-organizing processes in social environments show patterns being the result of structure breaks and of tensions and struggles between functions and structures and are activated and readjusting selectively” (De Roo, 2014,p.26) This section therefore places the concept of self-organisation along the ‘holy spectrum’ – a model developed by De Roo (2003).

In this model, De Roo (figure 1.1 and 2.1) distinguished between *function* and *structure* and further illustrates a pattern of relationship as a spectrum between *central guidance* (i.e., technical/ rational instrumental approach) and *Participative interaction* (i.e., communicative rational approach). According to De Roo, (2004; p.25 in Zuidema, 2013) ‘every position within the model stands for a policy option (how), an associated objective (what) and a collection of associated actors (who)

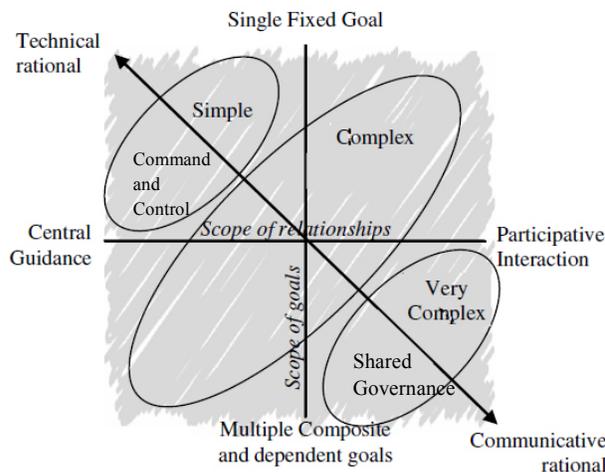


Figure 2.1: A Framework for Planning Oriented action, in which the relationship between planning and Interaction is based on complexity; by De Roo, 2003; in Zuidema, 2013

Function

In terms of functional choices, De Roo made a distinction between ‘single fixed goals’ on one extreme of the spectrum and ‘multiple composite goals’ on the other extreme as policy choices which he termed ‘the scope of goals’; i.e., what has to be achieved. To De Roo, a choice of single fixed goal correlates with a limited degree of complexity. This is in line with a technical rational approach of planning and decision-making. However, as we move along the spectrum we are faced with issues of higher complexity and planners or decision makers have to make trade-offs between multiple and conflicting objectives; i.e., communicative rational planning (see Zuidema, 2013). In between the two extremes, planners can select a single objective, but make a room for bargaining and the acceptance of other alternative objectives.

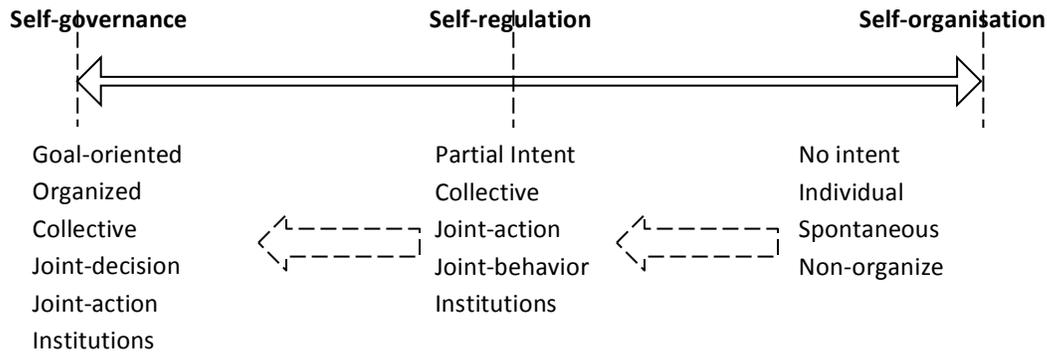
Structure

When it comes to *structure* De Roo (2003), the two extremes choices are categorized as highly centralized and highly decentralized structure. Highly centralized structure relates to the ‘coordinative model of governance’ which Portugali (2006) described as Just-in-case planning (2006). De Roo (2003) describes this position as central guidance, which is characterized by central government rules and regulations on planning, with limited participation, and focused on achieving defined objectives.

On the other extreme of the spectrum is highly decentralization. This symbolized the pattern of relationship that is based on the interaction among the many actors in the planning process (De Roo, 2003). It also relates to participative and interactive planning approaches (see Innes, 1994; Healey, 1996). Under this extreme, there are competing interests and power struggles coupled with dialogue and consensus building as illustrated by figure 2.2. Actors make decisions in relation to their socio-economic landscape and integrate varied interest and opinions to address existing problems. There is therefore a degree of local freedom among individuals and an opportunity for local initiatives based on the local conditions. This therefore marks a shift from centralized guidance and control to a stage that focus on optimizing the self-organising potential of individual various local stakeholders in a decentralized structure (Zuidema, 2013).

There are multiple policy options in between the above-identified extremes. Since, the

emergence of new patterns and contextual changes sometimes prompt the system to co-evolve internally and externally to achieve collective results. From this moment, issues of governance evolve as discussed below.



4.5.1 Self-governance or Self-regulation in Planning

Actors in social environment are reflexive; they think plan and process information through their internal system and act accordingly (Teisman et al, 2009). Self-organisation in a social environment takes place within a dynamic multi-level environment in which the system openly relates to and is influence by its socio-cultural and socio-economic context.

Autonomous behaviour in social environment is thus difficult to maintain (De Roo, 2014). Collective behaviour results and progresses towards institutional structures as actors aim to stabilise the system. These institutional structures are essential for intersubjective exchange and enable individuals to express themselves as actors in an institutional environment (De Roo, 2003). The institutions regulate social actions and enhance the adoptive capacity of the system. This reiterates Heylighen (2002, in Tesiman et al., 2009) argument that ‘controlling agents’ (rules and norms) cannot be separated from a system as it develops since their aim may be to guide and control the system they are in. It is assumed that an internal order can be achieved to cope with the environment in an effective way. This triggers ‘self-regulation’ or ‘self-governance in a social system. Whilst “self-organization refers to a seemingly non-existing collective of disordered parts being triggered to an effort or move through which patterns emerge as a *collective result*”, in self-governance collective initiatives are taken by a group of individuals or households (in a form cooperative) based on agreed motives and purpose within a local

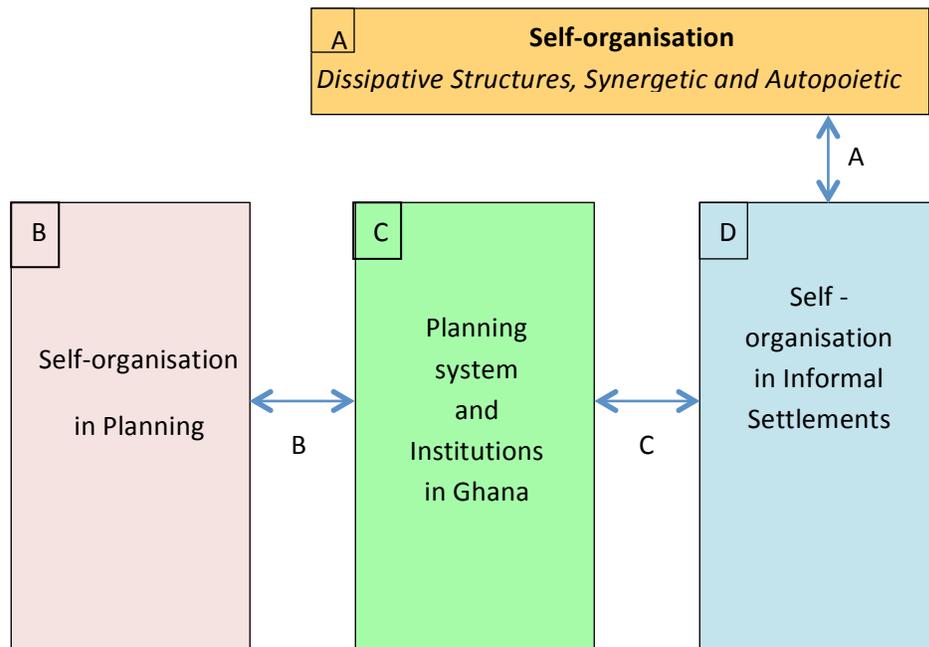
institutional setting. These initiatives are usually visible within the community. Cooperating members formulate rules and sometimes assign roles to guide decision-making. These tend to regulate practices and stimulate the emergence of other practices that fit within the initiative. The “self” in self-governance or self-regulation is under the responsibility of the collective without interference of a higher body such as government body” (De Roo, 2014, p. 25).

2.6 Conceptual Framework

The conceptual framework describes a set of broad ideas and principles taken from relevant fields of enquiry and used to structure the research. It shows the preferred approach and the main issues to be studied. Figure 2.4 summarizes the ideas of the research

The conceptual framework for this research hinges on the concept of self-organisation, the self-organisation processes in informal settlements and the relationships between these informal settlements and the planning institutions in Ghana.

Figure 2.4 Conceptual Framework



Source: Authors' Construct, 2014

Box A shows the concept of self-organisation which forms the theoretical basis of this research. It would be used to explore the self-organisation processes in informal settlements. The three theoretical concepts dissipative structures, synergetics and autopoietic as elaborated above would be used in the analyses of the selected case studies.

Box B symbolises the self-organisation in planning in terms of the theoretical conceptions posited by planning theorists. This would inform planning institutions on the actions or positions they should take when dealing with self-organising communities.

Box C shows the planning system and institutions in Ghana. Institutions are already embedded in social system as rules and structures and thus will regulate behaviours and stabilize situation. Institutions also act as reference by sending information to individuals in the society or the society as a whole to reflect on their activities and behaviours in society. This interaction can either constrain the way of thinking in the self-organising informal settlements or stimulate a learning process.

Box D highlights the self-organisation processes in the selected informal settlements. These case studies would be analysed to understand the processes of self-organisation in the settlements and the institutional interventions which stimulate or constraints the self-organisation processes.

2.7 Conclusion

Above, I have discussed the theoretical perspectives of self-organisation. The discussion revealed that, in an open complex system; i.e., the city or community, there is a constant interaction among the elements (between individuals), and between the elements and their environment. This therefore, often results in the development of new structures (in this case informal settlements). Again, the literature revealed that, in order to survive or cope with their environments, the elements within the system undertake certain initiatives themselves based on the existing environmental context. These findings provide a useful context within which my research is situated. This study would therefore build on these findings in Ghana by providing case-specific issues in the Greater Accra Metropolitan Area.

CHAPTER THREE

BACKGROUND STUDY ON INFORMAL SETTLEMENTS IN GHANA

3.1 Introduction

This chapter presents the institutional and regulatory frameworks within which the selected informal settlements exist and also discusses the relationship between land tenure security and the development of informal settlements in the Greater Accra Metropolitan Area. It also gives brief contextual profile of the selected settlements showing the social and environmental context within which the study is situated. The output of the chapter serves as a major ingredient for the analyses of self-organisation processes in the selected informal settlements in Chapter Four.

3.2 Planning System in Ghana

Prior to 1992, the approach to development planning – inherited from the British colonial government – in Ghana was national in scope and sectoral in nature. Described as centralized planning, this approach defined national goals and objectives and formulates national development plans based on the views of central government agencies. However, this approach was labelled as insensitive to community aspirations and opportunities for local level development initiatives.

In 1993, the planning system was refined by the mutual provision of legislation under the 1992 Constitution of the Republic of Ghana. These include the Local Government Act of 1993 (Act 462) the National Development Planning (Systems) Act of 1994 (Act 480)

These legislative instruments gave birth to a decentralized planning system in Ghana and created the Metropolitan, Municipal District Assemblies (MMDAs). The motive was to address the defects of the centralized planning approach by decentralizing the planning system and ensure integration and effectiveness in the formulation and implementation of development policies and programmes at national, regional, district and sectoral levels.

The National Development Planning (System) Act 1994 (Act 480) instructs the National Development Planning Commission to issue periodic legislative instruments and guidelines to

regulate the decentralized planning system and to guide District Assemblies (DAs) and Sector Ministries, Departments and Agencies (MDAs) in the preparation of Development Plans (Interviewer 1, 2014). It, therefore, serves as the national coordinating body of the decentralized national development planning system.

The District Planning Authority established under the Local Government Act, 1993 (Act 462) also instructs the MMDAs to;

- *Initiate and prepare district development plans, and settlement structure plans in the manner prescribed by the Commission and ensure that the plans are prepared with full participation of the local community;*
- *Integrate and ensure that sector and spatial policies, plans, programmes and projects of the district are compatible with each other and with national development objectives issued by the Commission;*
- *Synthesize the policy proposals on development planning in the district into a comprehensive framework for the economic, social and spatial development of settlement and ensure that the policy the district including human proposals and projects are in conformity with the principles of sound environmental management. The preparation of a settlement plan shall be in accordance with the provisions of any existing legislative instrument on planning which is relevant to the preparation of the settlement plan; and*
- *Initiate and co-ordinate the processes of planning, programming, budgeting and implementation of district development plans, programmes and projects (LG Act, 1993, Act 462, Issue 1, V-3473.p, 24 and 25).*

Inferring from the above, the spatial development planning, development and management in Ghana is, therefore, characterized by multiple agencies. These agencies include MMDAs, National Development Planning Commission (NDPC), the Ministry of Local Government and Rural Development (MLGRD). The overall responsible for planning revolves around the MMDAs.

However,

“ with the little experience and lack of capacity; i.e., absence of Town and Country Planning Departments in most MMDAs, inadequate requisite manpower such as planners and building inspectors – in urban management, MMDAs have often not been able to develop strategies and plans to mobilise resources they need to promote spatial development. Besides, the MMDAs, NDPC and the Regional Coordinating Council fail to effect the institutional coordination as

required under Act 462” (Interview 2, 2014).

Moreover, the absence of national spatial policy has undermined the policy coherence of the multiple central and local government institutions to perform, and with the responsibility for spatial planning and management thinly spread among the agencies (Interview 1 & 2, 2014).

Therefore, spatial planning in Ghana does not keep pace with urbanization and socio-economic development and many legislation and policies supporting spatial planning are outdated (MLGRD, 2010 and interview 2, 2014). Furthermore, the economic reforms in the mid-1990s (Ghana Vision 2020) and the subsequent Medium Term Development Plans – Ghana Poverty Reduction Strategy (GPRS I, 2003- 2005), Growth and Poverty Reduction Strategy (GPRS II), and Ghana Shared Growth and Development Agenda (GSGDA, 2010-2013) – sought to accelerate socio-economic development and poverty reduction with less attention to spatial development. These have resulted in haphazard development, urban sprawl of cities and informal settlement all with deficient basic infrastructure and services.

However, without prejudice, the MMDAs are also mandated 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” (LG Act 462, 1993, section 53).

In order to meet this mandate, planning institutions tend to use force evictions and demolitions of settlements and structures that do not conform to their planning schemes. This normally results in clashes between those affected and planning institutions. Old Fadama/Agbogbloshie is a clear example. The government advocated politics of non-recognition towards the settlers and called for its demolition despite the fact that these settlements emerged because of the weak planning institutions (Grant, 2006).

From the above, it could be seen that spatial planning does not keep pace with the physical development of the country due to weak institutional capacity. There is no Spatial Development Plans (SDPs) to regulate spatial development. This is evident at the MMDAs, none of the MMDAs studied has a spatial development plan. An interview with a district planner revealed

“ the only spatial planning activities carried out the local level is the zoning of land among the different land uses and preparation of planning schemes. The major problem is land tenure security and ownership which has resulted to informality in the city” (Interview 1, 2014).

This justifies Duran-Lasserve (2006) assertion that the lack of tenure security fuels the development of informal settlements in urban areas as will be discussed.

3.3 Land Tenure System in Ghana and Accra

There are two main types of land tenure arrangements and ownership forms in Ghana. They are the customary land tenure system and the formal land tenure system (Nyametey, 2010).

Land under the customary systems is considered an inheritance from the gods and ancestors, and it is the responsibility of the present generation using land resources to protect it for future generations and ensure that it is not degraded (Gough and Yankson, 2000). Although community members (with birth right) have absolute right to customary land, the leaders of communities serve as caretakers with responsibility to oversee the land on behalf of the whole group (Ministry of Lands and Forestry, 1999).

Besides the customary land tenure system, there are formal land tenure types and ownership rights, which are backed by statutory law. Introduced during the colonial era, formal land tenure systems operate alongside the customary systems and are predominant in urban areas (van Asperen, 2007). However, the customary land tenure system continues to play an important role in Ghanaian cities because a large proportion of land is still administered under it. This is common in the peri-urban areas where agricultural lands are gradually losing to residential and commercial land uses (Asiamah, 2003)

The land tenure systems in Ghana are innately linked to the basic philosophies of the “markets” and “rights-based” approaches. The principles of the formal systems are in line with the market-based approach while the traditional customary land tenure systems are similar to a human rights-based approach (Nyametey, 2010)

3.3.1 The Market- Based Approach

Proponents of this school of thought like De Soto (2000) argued that land titling increases land value and serve as an incentive for owners to make long-term capital investments by using their

property as collateral to secure loans to finance capital investment. According to De Soto (2000), when land is registered and titled, it is converted into a commodity that can be traded in the market and transferred into a productive use. He further argued that, because land registration ensures proper documentation of all features associated with the land, adequate protection of rights and interest is guaranteed which positively influences development.

However, whether the land titling is the model way for ensuring land rights for the poor and protecting them against eviction is debatable since it is the same market system which has deprived poor people of the land and housing market thus forcing them to squat illegally (Durand-Lasserve and Royston, 2002)

Certainly, the activities of the property markets have excluded some low-income residents of Accra access to land and decent shelter in the city. These ‘agents’ (people) then wander around looking for attractive sites to settle hence, the squatting and development of informal settlements such as Old Fadama/Agbogbloshie and Amui Dzor. This reiterates the postulations of Portugali (2011) based on the concept of Synergistic (discussed in Chapter two), and Sobreina’s (2002) Favela project that individuals are ‘fed’ with information about their environment and based on this information they self-organised themselves changing the spatial structure of the city.

3.3.2 The Right –Based Approach

The right-based approach emanates from United Nations Istanbul Declaration in 1996 (Dey et al., 2006). It advocates equal access to land for all people and encourages governments to ensure that all citizenry regardless of their gender, age, social status among others, have equal access to land and also ensure that such rights are legally protected (UN-Habitat, 2003). In this regard, access to land and housing (affordable housing) was declared as a fundamental human right of every citizen (UNCH, 1996 in Nyamete, 2013). Since Ghana was a signatory to the declaration, it can, therefore, be said that if implemented, the right-based approach would lessen the accommodation problems of squatters and low-income residents of Accra.

Contrary to tenure security, Durand-Lasserve (2006) observed that the insecurity of land tenure is a main source of disincentive for people to invest in land. The non-recognition of

informal settlements by the MMDAs and the Town and Country Planning Department implies occupants would not benefit from government infrastructural developments (King and Amponsah, 2012). A classic case is that of Old Fadama, where the road and drainage networks are not included in any infrastructural development project of Accra. Besides, lack of tenure security discourages household investments on their houses and environment. This, therefore, worsens the housing and sanitary conditions in these informal settlements (Durand-Lasserve, 2006)

Inferring from the above, it can be observed that insecure tenure negatively affect the provision of basic services, and households' personal investments aiming to improve their environment. However, in the Ghanaian context, it is worth nothing that, insecure tenure is not necessarily the main condition for informal settlement development or the inadequacy of basic social services in informal settlements. A clear case is Chorkor. Chorkor is a traditional settlement for the Ga⁵ and the lands are customarily owned and are under the stewardship of the Ga Landlords. Residents in this settlement have tenure security. However, the building regulations in Ghana are restrictive such that only areas zoned for residential purposes are considered for building permit (King and Amponsah, 2012). These building permits are requirements for basic services such as electricity and water. Because buildings in this settlement do not have permits, residents are therefore unable to formally access basic services. While building permits are not granted to residents to access utility and other services, the settlement is not also demolished or prevented from expanding by the local government and with time this settlement became one of the worst slums in Accra. The case of Chorkor depicts the weak and failing planning approach in Accra, in terms of how to deal with urbanization and informality as opined by the UN- Habitat, (2009).

3.4 Profile of Selected Communities

3.4.1 Old Fadama/ Agbogbloshie

Old Fadama, is a slum in the centre of Accra, the capital city of Ghana, and has become a major destination area for migrants. Old Fadama evolved as a temporary living settlement for people from the north of Ghana fleeing the Nanumba-Konkomba ethnic conflicts in the 1980s. The

⁵ The Ga is an ethnic group in Ghana and primarily lives in the Greater Accra Region.

settlement occupies about 31.3 hectares of land and it is estimated to be home to about 80,000 people (MacPherson, 2012). Since it is not officially planned as a residential area, the settlement does not receive any form of social services sanitary facilities (King and Amponsah, 2012). However, Old Fadama continues to expand with the construction of wooden housing structures in rubbish dumps (AMA, 2007).

The area occupied by the squatters is public land acquired by the Government of Ghana under different executive instruments, such as the “Accra Industrial Estate (Acquisition of lands) Ordinance No. 28 (1956)”, by which part of the land was assigned to light industrial activities, including “food processing”, “auto repairs” and a brewery (Grant 2006, p.9).

Colonial and post-colonial governments undertook activities to reclaim usable land from the swampy lagoon environment through dredging and in-filling to enhance the flow of the Odaw River area (Grant, 2006). The land that was left unused after the dredging and reclamation activity is what the squatters have occupied

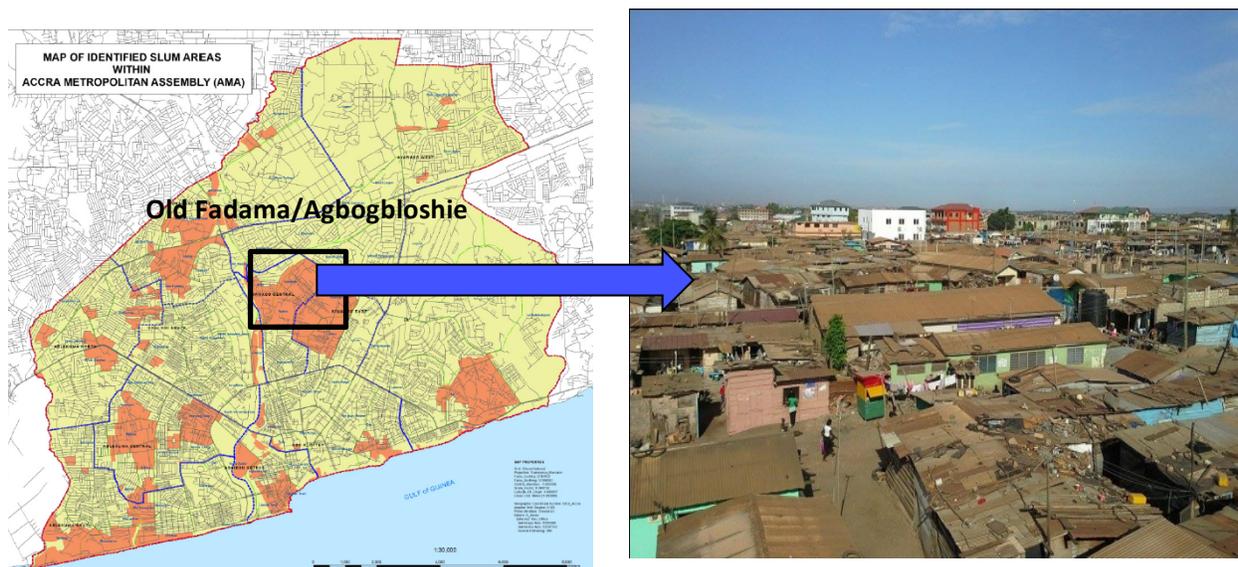


Figure 3.1 Location of Old Fadama/Agbogbloshie in the Accra Metropolitan Assembly

Source: AMA, 2011 and Field Survey, 2014

3.4.2 Chokor

Chokor is an overpopulated slum settlement overlooking the sea southwest of the city centre. It lacks most basic infrastructure and the houses, dating from the pre-colonial and colonial eras, are made of brick and mud. The geographical location of Chokor and the booming fishing and fish smoking industry has attracted a lot of people from across the country to settle there. Unlike the

Old Fadama/Agbogloshie, some residents at Chorkor have secured tenure to their lands and houses.

However, the overpopulation coupled with bad sanitary conditions has made it one of the worse slums in Ghana. The increasing population of residents puts pressure on the available facilities resulting in poor management and indiscriminate defecation especially in open spaces (nature reserves), and has been a major cause of diseases like cholera, typhoid and malaria in the community.

Similar to all slums in Ghana, Chorkor lacks the most of the basic social facilities that make life meaningful in any human environment. The space per structure awfully limited. Without layouts, the mud and wooden shacks are erected haphazardly blocking any path that could have been used as access or roads for the delivery of services.



Figure 3.2 Location of Chokor in the Accra Metropolitan Assembly
Source: AMA, 2011 and Field Survey, 2014

3.4.3 Amui Dzor

Amui Dzor is a slum community located at the Ashaiman Municipality, which is close to Tema, the industrial hub of the country. Tema is planned as the industrial city of Ghana. During its development many of the workers who came to work at various construction sites and the harbour lived at Ashaiman. Ashaiman therefore served as the dormitory town. Waste wood from

the harbour construction sites were used to construct temporary dwelling units by the immigrants. Over the years these wooden structures never got changed and became permanent housing units. This makes the Ashaiman municipality one of the few in the country with about 70 percent of its settlements being informal (King and Amponsah, 2012). The settlement emerged in a self-organised process, beginning from an ‘attractive boundary’ (which in this case is the city of Tema). Interacting with their environment, the individuals (agents) who migrate to Tema in search of jobs and attractive urban sites are fed with information about their environment which changes their behaviour and drives them to settle at Amui Dzor.

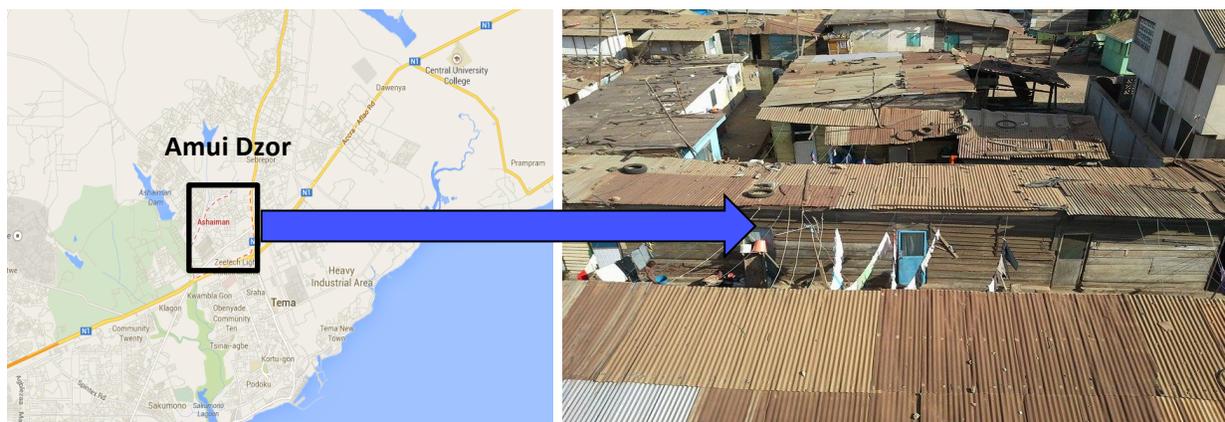


Figure 3.3 Location of Amui Dzor in the Ashaiman Municipality
Source: Field Survey, 2014

3.5 Conclusion

In this chapter, I have presented a background on informal settlements in Ghana. It became clear that spatial planning does not keep pace with the physical development of the country due to weak institutional capacity. The chapter also identified that, the pricing of land has forced low-income and very poor residents of Accra, who are unable to afford land to develop their own housing or rent decent accommodation, to squat on private and public lands. This highlights how informal settlements emerged through a self-organising process with the individual immigrants acting as agents and constantly interact with their environment and modified their behaviour in order cope (as discussed in Chapter two). Chapter Three has thus laid the foundation for the analysis of self –organization processes in informal settlements (in Chapter Four) as new structures continue to emerge out of local interactions among actors in these settlements and with their environment.

CHAPTER FOUR

CASE STUDY ANALYSES

4.1 Introduction

This chapter takes its roots and builds on the discussions submitted in the previous chapters by analysing the self-organising activities and initiatives in the selected study communities and how existing institutional regulations influence these activities. It seeks to provide answers to the research questions posed in chapter one. The next section would highlight the initiatives that emerge within these settlements and how they support or conflict with the existing planning regulations.

4.2 Case Studies

Three case studies are discussed in this thesis. These include Old Fadama/Agbogbloshie, Chokor and Amui Dzor. These case studies represent practices of self-organisation in informal settlements within the Greater Accra Metropolitan Area. The first case (Old Fadama/Agbogbloshie) symbolizes a system of governance and cooperation within informal settlements and how they dialogue and negotiate with government institutions. The second and third case studies show a different form of self-organising initiatives in terms of social housing and integrated water and sanitation management projects respectively. Each of the above cases has unique features and is embedded within its socio-economic and cultural landscape.

The analysis is based on two perspectives; historical analysis precedes and lays the foundation for the theoretical analysis. Under the historical perspective, a specific initiative from each study settlement is discussed under three (3) phases of its development. These phases are further related to the categories of self-organisation discussed in chapter two (2). These phases are;

Pre-development of the initiative: This explains how and when the initiative emerged in the settlement and those who were involved.

Development of Initiative: This explains how and when the initiative spread and was adopted by other community members.

The stabilization stage: This explains how and when the community stabilizes their initiatives within the regulations of government institutions. The initiative reaches its peak at this stage when it successfully fits within the regulatory framework of informal institutions.

Theoretical analysis of the case studies is centred on the three (3) different theories of self-organisation i.e.: dissipative structure, synergetics, and autopoiesis discussed in chapter two (2).

4.2.1 Old Fadama/Agbogbloshie – Slum Union of Ghana

Historical Analysis

This initiative shows how informal settlers self-organise themselves to dialogue with government institutions. The initiative began in 1993 when a resident of Agbobloshie observed that squatting on government lands incites serious trouble. Instead of calling for a general community meeting, they organized themselves into savings groups so as to first promote social cohesion among the women⁶ and between the various clans and ethnic groups in the community. The initiative gained the support of the men and was disseminated to other sections of the community. The savings became the basic capital for the women. After few years of cooperating and pulling financial resources together, residents appointed leaders whose responsibility was to coordinate the savings groups and also mediate in conflicts within the community (Interview 5, 2014).

By the year 1998, Old Fadama/Agbogbloshie (hereinafter OA) settlements had developed a robust social and political hierarchy, but these frameworks were not legal in the eyes of governmental institutions (Interview 3 and 4, 2014). The residents used both local legal actions and local political pressure through the main political parties to resist eviction.

In 2002, efforts at the local level linked the community to several organisations such the Centre for Public Interest Law (CEPIL), Shack/Slum dwellers International (SDI) and People's Dialogue on Human Settlement (PDS). In collaboration with the CEPIL, the residents started a court action to restraint the AMA from evicting them. The court action by the residents of OA restrains force eviction in their settlement and other informal settlements. As a result, the leadership of OA gained the support of the other informal settlements.

⁶ Promoting social cohesion among women was sought because domestic violence among women was rampant due to the different socio-cultural background of these women.

In order to further deepened their roots and gain recognition by government institutions, the leaders of OA in collaboration with representatives from the other informal settlements formed a union and registered it as a Local Non-governmental organization with the name Slum Union of Ghana. The union seeks to fight against force eviction, advocates for socio-economic and cultural rights of slum dwellers, and forms a united voice for slum dwellers across the country (Interview 3,4,5,6&7, 2014).



Figure 4.1 Left: Members unanimously agreed on the name Slum Union of Ghana;
Right: Office of the Slum Union of Ghana
Source: philipkumah.wordpress.com and Field survey, 2014

To gain more insight on this case, three (3) phases of its development are further explained below;

Pre-development of the Initiative

The first initiative was in the form of promoting social cohesion which came from a man⁷ who saw the need for a union to have a strong and united voice. The initiative begun in the form small savings groups among women in one household and later gained the support of several women and was finally endorsed by the men in the community. The initiative spread to other parts of the slums in the form of a social activity called susu⁸.

⁷ Philip Kuma who later became the chairman of the Slum Union of Ghana

⁸ Susu is a small savings scheme where members weekly contribute a fixed amount of money for a particular member of the group. This continues till every member receives his or her share. It is believed that, the bulk of money given to one person can serve as a capital base for the person. The profit is then ploughed back into the savings group.

Development of Initiative

The local initiative received attention from several households increasing the membership. Leaders were therefore elected to facilitate, coordinate and administer the daily activities of the group. Elected leaders represented the community to deal with external organizations and exerted much influence such as opposing police in criminal searches in the community. They formulated bye-laws which were binding to all members of the savings group.

In 2002, the community gained the support of several NGOs and collaborated with CEPIL to appeal a court action against them and other informal settlements. The initiative was recognized to be an effective means of building social cohesion among the slum dwellers who had different ethnic and cultural background.

The community connection with NGOs enabled it to jump scales and explored other opportunities. Working with SDI, a savings model was developed which sought to further develop community solidarity. It linked the urban poor across ethnic, religious, national and international boundaries. This later became a learning experience and facilitated connection with slum dwellers internationally. The OA leaders began to speak for as well organize the community and other informal settlements (Interview 7&8, 2014).

In this phase, the community achieved loads of successes:

They were able to restraint eviction; through their actions and networking with NGOs other slum dwellers, leaders were able to challenge and demonstrate to government demanding their human rights. Also, the residents highlighted the absence of national policy to deal with spatial quality, the marginalized and urban poor. Drawing the attention of UNDP, the Ministry of Works and Housing was instructed to include slum inventory survey in its action plans and annual reports (see, Grant, 2006).

Local-local and local- global connection; the leadership of OA engaged in several cross-section and cross-cultural activities. Representatives visited South-Africa, India, Thailand and Kenya in exchange programmes. This deepened their understanding on community-led initiatives and they learned about the benefits of cross-sectional and cross-cultural integration. It also opened the settlement to the global world (the external environment) and thus created an

opportunity to learn from its external environment and share with its neighbours or other informal settlements. This further strengthens the self-organisation process in the community.

Development of cordial relationship with Government; self-organising at the grassroots level enabled the residents to enjoy a greater degree of legitimacy when dealing with policy makers. Government then shifted from its stand of force eviction to one that involves dialogue with community members;

Creating of Access roads: It was impossible for fire tenders to go into the community to fight fire. The community leadership therefore decided to create access roads within the community so as to improve accessibility. This idea gained the support of community members and many access routes were created.

Stabilization of Initiative

Although the community achieved much success from 2002 to 2005, and was referred to as the mouthpiece of slum dwellers in Ghana, they saw it necessary to stabilize their unity. Besides, since their union was not legally registered, some government institutions still disregard them and their actions were referred to as nuisance and against public order. With the support of community members, the leadership hired an office space, drafted a constitution and adopted some code of ethics. In June 2012, representatives from other slums were invited to a general meeting to form a union which was later registered under the Attorney's General Department as 'Slum Union of Ghana'.

The union undertakes four (4) main activities (Interview 4, 2014). These include,

- *Lobbying with government to end forced evictions and fulfil their responsibilities to slum communities;*
- *Rapid response to emergencies such as fire outbreaks and floods in slums;*
- *Educating and sensitizing slum dwellers on their rights and responsibilities and*
- *Attracting social amenities to slum communities.*

Theoretical Analysis

The analyses under this section are arranged according to the different theories of self-organisation discussed in chapter two (2). These are; dissipative, synergetic, and autopoietic.

Dissipative Self-organisation

The theory of dissipative structure stresses on the exchange of information between an open system and its environment. Taking the informal settlement as a system, dissipative self-organisation occurred because the settlement continuously interacts and exchange information with its external informal through its residents. For instance, at the Phase of initiative development, a grass root-global connection was established linking the community to local and international NGOs such as CEPIL and SDI.

At this stage, there was a continuous flow of information ‘in and out’ of the system which influences the internal self-organisation processes of the settlement as similarly demonstrated in Benards experiment. The ‘in information’ came from NGOs such as CEPIL and SDI in the form of exchange workshops and community sensitisation programmes. The settlement then dissipates this knowledge (out information) to other informal settlements, and institutions. This out information was formally disseminated through local radio discussions, workshops, and newspapers and informally through the personal interactions of the residents. This continuous flow of information ‘in and out’ of the system enables it to self-organise itself at the expense of the order which the planning institutions and government sought to create in the environment.

Synergetic Self-organisation

This theory emphasis the working together (interaction and interrelationship) between elements of a system, how they form synergy among different sections of the society (Macro-level) and its overall structure and behaviour. The interaction and interrelation between the elements describe and prescribe and order in the system which Haken called the order parameter. The order parameter enslaves the other elements to act in the same way. In the case of OA, the order parameter is the bye-laws they formulated to guide their actions in the susu groups and the settlements and the constitution they later promulgated. For instance, it was stipulated that;

- Every member of a susu group had to deposit her money (2 Ghana Cedis) before Old Fadama market day which falls on every Saturday;
- Every member who failed to pay the fixed amount was fined to pay three times the amount;
- All disputes and dissatisfaction were reported to the leaders of each susu who later report to the elected leaders.

All these rules/institutions (order parameter) were followed by community members and this fuelled the self-organisation process of the community. This is demonstrated by the theory of synergetic self-organisation. In this theory, the domination of the order parameter can be possible through the interaction of the elements in the system. In the case of the laser light experiments atoms are the element. In the case of OA, the residents who are the elements of the system were able to maintain their interaction and interrelation, i.e., working together. This was indicated by the appeal submitted to the High Court against their eviction by the Metropolitan Assembly. Also, the interaction and interrelation created positive feedback which excited the residents to further self-organise and accommodate 'high order parameter' of the government through the formation and registration of the Slum Union of Ghana.

Another important feature of Hakens theory is the control parameter - which is the power input in the case of the laser. The control parameter can be seen as an external influence on the system, which in the case of OA, manifested in two forms. The first occurred in the form seminars and international workshops attended by community. This empowered community members and increased their knowledge on community-led initiatives. The knowledge and experiences gained acted as 'power input' into the community which made it oscillate and self-organised itself. The second manifested in the form of central government eviction threats conflicted with the actions of the residents and influenced them to take other initiatives in order to survive.

Autopoietic Self-Organisation

Autopoietic Self-Organisation centred on how the interaction between different components of the system may regenerate and maintain other elements needed by the system. In the case of OA, it is about the maintenance of the institutions (bye-laws and constitution) created in its process of

self-organisation. The community was able to regenerate some roles performed by NGOs such as CEPIL which was no longer working with the community after the court verdict in 2004. They adopted advocacy, lobbying and negotiation skills through their interaction with CEPIL. At the stage of stabilization, community representatives could organize advocacy trainings and sensitization programmes in other informal settlements. In one of the FGDs, participants stated that:

“we were seen as thieves in the eyes of the government. But the activities of Philip and his people open our eyes and put us on our feet to demand our rights and liberate ourselves from harassment. We now know what to do in case of emergencies, and we have created pathways for vehicles and gutters for water to flow in our settlement. We have planned and managed our community better” (FGDs 1, 2014).

The above clearly indicates regeneration in the settlement which Luhmaan (see chapter 2) described as a learning process. In this case, OA learned through its interaction with NGOs and passed it to different settlements which triggered them to self-organize. The learning process which emanates from the interaction between elements of the system contributed to the ability of the settlement to self-maintain the institutions regenerated in its self-organisation process.

Lessons from the Case Study

The generation and maintenance of institutions in Old Fadama and Agbogbloshie represents a phenomenon of informal governance and an illustration of the informal settlements being organized enough to act and interact with institutions in the legal world. The case study further revealed that;

- When the control parameter takes the form of ‘command and control’ it might influence the elements to self-organise negatively. By implication, the external influence should be flexible and negotiable. For instance, the community collaboration with CEPIL and SDI was based on dialogue and mutual understanding, and that motivated them to develop local-local connection with other settlements and the creation of access routes in the settlements. Therefore, spatial planners should not seek full control in chaotic situations but strike to balance between control and inter-subjective agreements.

- Also, the regeneration and maintenance of institutions stabilized the initiative and triggered learning experiences to be replicated to other communities. This positively impacts and stimulated a self-organising process in neighbouring settlements.

4.2.2 Amui Dzor - Social Housing Project

Historical Analysis

The initiative began in 2004, when some women who wanted to lessen their economic plight mobilized themselves into savings group. Motivated by the results achieved, other community members joined the savings group. Facilitated by GHAFUP, they formed a cooperative and set out plans to construct a housing unit. UN-Habitat assisted the cooperative to negotiate a long-term mortgage for the cooperative from Ghana Commercial bank. A three-story structure consisting of 15 commercial units, one and two bedroom apartments, and a 12-seater public toilet was constructed. The Amui Dzor Housing Project was awarded “*Best Social Innovative Housing Project*” in Sub-Saharan Africa by a panel of housing experts in 2010 (Interview 9, 10,11 &12).

After a successful completion of the project, the cooperative established a revolving fund where revenue from the housing unit are plough back and it is planned to be used for the construction of another housing unit in 10 years time (Interview 11, 2014).



Figure 4.2 Left: The Pilot Project (Wooden Structure); Right: Transitional Housing
Source: Field survey, 2014



Figure 4.3 Left: Amui Dzor Housing Project; Right: The Public Toilet at the Amui Dzor Housing Project
Source: Field Survey, 2014

Pre-development and Emergence of Initiative

The initiative emerged in 2004 from women in the settlement. The first initiative was to establish a savings group that would enable them save money and manage their finances. As an open system, the community exchanged and absorbed information from its external environment. The women groups absorbed ideas and experience through informal interaction and visits to OA which had a better experience as far as micro savings is concern.

They save daily after their daily works, mobilizing not only financial resources but collective capacity as members meet weekly to manage their funds and deliberate on pressing issues in the community and formulate strategies for addressing them (Interview 10,11&12, 2014). These meetings built the commitment of members and other community members were motivated to join the savings group. This expanded the membership and also attracted the support of men. By June 2005, the group registered 2,000 members and formed a saving cooperative (Interview 9& 11, 2014).

In 2006, the community increased their savings and opened a savings account with Ghana Commercial Bank where they save weekly. This served as collateral for them to access loans.

Development of Initiative

This phase started with the formation of Amui Dzor housing cooperative which sets out plans and strategies to invest their savings in a social housing project. This phase is characterized by

dialoguing, advocacy, and partnership. The openness of the community system became a paramount feature in this phase. Several activities were undertaken at this phase. First was the construction of wooden apartment which served as a pilot project (see figure 3.4). The cooperative rented out the apartment to interested members and received a lot more profit which was ploughed back into their savings. This pilot project was not an easy task since it faced restrictions from the municipal assembly which prohibited the construction of new structures in the settlement. But with the commitment of members, some of them moved to stay with friends and donated their pieces of land for construction. This initiative, which proved to be effective in dealing with the accommodation problems in the settlement gained the attention of Ghana Federation for Urban Poor (GHAFUP) in 2006. Some of the cooperative members were taken to India on an exchange to study the social housing projects and community- Led initiatives on improving housing conditions in informal settlements (Interview 13, 2014).

The collective action between the community and GHAFUP's facilitated the formation of a partnership with the U.N Habitat Slum Upgrading Facility. At this stage, the cooperative developed the desire to expand and improve on their first initiative. They negotiated with the tradition council of Ashaiman to secure a piece of land and partnered with Tekton Consultants to design the structure. Members also negotiated with the municipal assembly for building permit. The assembly readily issued the permit and offered consultancy services since the project was in line with its Slum Upgrading strategies (Interview 11&13, 2014).

After gaining the support of the planning institutions, UN-Habitat helped to secure a long-term mortgage from Ghana Commercial Bank – with which the cooperative has been transacting business – at an interest rate of 12 per cent. Together with the cooperative initial savings, construction commenced. One annotative strategy that emerged at this stage was the relocation of those residents displaced by the construction to a transitional housing apartment. The municipal assembly accorded this strategy since it served as a practical example of relocating slum dwellers during upgrading processes (FGDs 2, 2014).

A three-story structure consisting of 15 commercial stores, one and two-bedroom apartment, and a 12-seater public toilet was constructed. This is managed by the cooperative in accordance with their constitution and rental agreements, which subsidizes the cost of housing

for its members. Non-residents who use the public toilet paid 20 pesewas and the housing cooperative collects this money and uses it to help maintain the facility and also pay back its loans.

As discussed above, this initiative evolved and transformed through several stages. After the commissioning of the project and handing over to the community (in October, 2011) several development still took place such as the construction of a mechanized water system which serve the housing unit and the neighbouring houses. Its development Phase ended when the project was awarded as the best social housing project for urban poor in sub-Sahara Africa (Interview 13, 2014).

This initiative has attracted the attention of several countries and organisations. The government of Ghana has adopted the design as a model for in-situ slum upgrading projects. Several institutions and visit the community to learn what they have done to raise the housing facility.

Stabilization of the Initiative

The stabilization phase is related to the operation and maintenance of the housing facility after it was commissioned. The cooperative adopted several strategies to help maintained the facility and pay back its loan.

Firstly, in order to ensure good sanitary conditions within the housing facility, the cooperative signed a contract with the municipal waste department to drain the septic tank of the facility within every five months and also collect domestic waste daily.

Secondly, it established a 10-year Revolving Fund which is an essential element for the repayment of the loan secured. Monthly rental payments from the housing units and commercial stores together with revenue generated from the public toilet and the sale of water are ploughed back into this fund, which continues to revolve fund into new businesses of members and also service the loan. It is expected that, the first three years would be used to service the loan and the remaining seven years used to raise capital for the construction of a new housing project in the community (Interview 13, 2014).

Finally, since it was necessary to stabilise the commitment of its members, the cooperative organized capacity improvement workshops, advocacy and sensitization training, health screening for community members and communal cleaning exercises. These activities motivated community members and triggered the development of several initiatives in the community. A classic example is the adoption of a communal refuse dump where community members dumped their domestic waste which used to be disposed indiscriminately.

The case of Amui Dzor highlights the effectiveness of self-organising process to affordable social housing in informal settlements. The community collectively saves money, which served as collateral to secure credit as well as marshalling the collective capacity and commitment required to sustainably manage projects. Partnership between the community and other stakeholders is important for addressing the social dysfunction that has for long excluded the urban poor – particular dwellers of informal settlements – from decent and affordable housing.

This initiative has gained much support from the planning institutions since it fits with the development plans of the assembly when it reached the peak of its development phase.

Theoretical Analysis

This section discusses and relates the case with the theoretical perspectives of self-organisation, which is discussed in chapter two (2),

Dissipative Self-organisation

In this case, the exchange of information between Amui Dzor and its external environment happened in every phase of the initiative. In the pre-development phase, the community received ‘in’ information from their visit to OA. Also, in the stabilization phase, the community exchanged information with its external environment upon their interaction with NGOs and during their exchange visit to India. Again, in the stabilization phase, the community exchanged received great information through their interaction with the municipal assembly. Relating this to theory, the information and knowledge received from external environment symbolizes the energy consumed (in the form of heat) by Bernard cells. As these cells continuous to receive energy they export entropy out of the system. In this case, the entropy is the out information, experiences and knowledge shared with institutions, the government of Ghana and the visitors

who came to learn from the community. Since the community still maintain the ‘in’ and ‘out’ exchange of information makes it more sensitive and able expand and modify its structure in response to its environment. This is proven through the construction of a mechanized borehole and the organizing of clean up campaigns which are needed but did not form part of the housing project.

Synergetic Self-organisation

In this study, the interaction and interrelation between community members have proven to be the most essential feature in all the three (3) phases of the project development. In the pre-development stage, interaction and interrelation was needed to form savings groups, and to build commitment among group members. Also, in the phase of initiative development, interpersonal relations played an important role in the formation of the savings cooperative and later the Amui Dzor housing cooperative.

Through these interaction and interrelations coupled with the emergent commitment of cooperative members, some formal and informal institutions emerged – in the form of rules and regulations – which members collectively agreed to be the ‘*order parameter*’ governing the cooperative.

These rules still ‘*enslave*’ members of the community and play important roles in the stabilization of the initiative. The rules and regulations formulated include:

- Each member of the cooperative had to pay a monthly contribution of 75 Ghana cedis;
- Each Savings group had to deposit their monthly contribution with the coordinator to be paid into the bank account in the presence of three members of the cooperative.
- Individual members with a total contributions of 1000 Ghana cedis and above are qualified to rent cooperative apartment.

These rules and regulation were grounded on the joint agreement of community members. They were therefore based on consensus and negotiation among cooperative members but not on the direct forces of ‘command and control’. Similarly, in the theory of synergetic self-organisation, the order parameter enslaves the elements of the system to behave the same. However, in this case, the ‘enslavement’ is voluntary and based on the joint agreement of community members.

Direct forces of ‘command and control’ set in as the initiative develops. These are the rules and regulations of planning institutions which the cooperative had to operate in accordance with. In the phase of initiative development, the cooperative had a clash with planning institutions when it constructed wooden housing apartment for rent. This conflicted with the planning regulations since the municipal sought to ensure spatial quality. The interaction between the community members and the planning institutions influenced the community to apply for a building permit and sought the expert services of the municipal assembly in order to construct the three-story structure.

In this case, the institutional rules and regulations in the theory of synergetics is known as ‘control parameter’ - which is the power input to the laser system – which influenced the community to strategies and changed its behaviour. The control parameter is therefore, the external influence on the system, which makes the system self-organise so as to make new emergence structure.

Autopoietic Self-organisation

In the case of Amui Dzor, autopoietic self-organisation is manifested in the regeneration of actors, and more significantly the regeneration and maintenance of the initiative. As discussed above, the initiative started in the form of savings group but upon interaction and interrelation among community members a saving cooperative was formed. In the development phase, the saving cooperative was transformed into a housing cooperative and the result of this housing cooperative was a wooden housing structure. Upon the interaction with planning institutions and other external parties, this initiative was later re-generated and a three-story housing structure constructed.

Autopoietic Self-organisation was also exhibited in the weekly meetings among community members and the discussions with both government and non-governmental organizations. These results of these discussions served as a point of reference for the regeneration and maintenance of the initiative and also provided community with standards for the monitoring and evaluating their initiatives.

Lessons from Case Study

- The Amui Dzor social housing project revealed the essence of partnership between informal dwellers and urban development stakeholders in addressing basic social problems.
- Another important lesson in this case is the interaction between the ‘enslaved’ and the control parameter’. Though the existing planning regulations restricted the community initiative in the early phase of its development. The continuous interaction between the community and planning institutions helped modified the initiative and embedded it within the regulatory and institutional framework. This stabilized the initiative and triggered other subsequent development.
- Also, local knowledge and freedom was also significant which contributed to the emergence, development and stabilization of the initiative.

4.2.3 Chokor - Sanitary Facility

Historical Analysis

Chokor is well known for its bad sanitary conditions among all the slums in Ghana. In 2005, a community member built a *Traditional pit-latrine*⁹ in his house. Community members individually adopted the idea and some constructed traditional latrines around their houses. However, these latrines though contributed to the reduction of open defecation were structurally weak and most of them collapsed after heavy downpour of rain (Interview 14, 2014).

A community leader then suggested the idea to build a communal toilet and bath for the whole community with the intention of stopping open defecation. In pursuit of their plan, and with the commitment of community members, the community contributed a certain amount of money in order to support the construction of the toilet facility. Each household was required to contribute 50 Ghana cedis (about 12.5 Euro), and with the support communal support of community members the project was successfully in 2010 (Interview 15, 16, 17 and FGDs 3, 2014). It was a 12-seater public toilet with hand washing facilities, eight public bathrooms, a

⁹ Pit latrine is a traditional toilet facility in underdeveloped Ghanaian communities built with local raw materials with a manually dug hole as the septic tank. It mostly has no super structure and poorly ventilated.

mechanized borehole which supplied water to the facility and a skip container for waste collection. Though the initial project plan did not include a mechanized borehole and a skip container, the community collaborated with a philanthropist who supported them with a mechanized borehole and Accra Metropolitan Assembly (AMA) later provided a skip container for waste collection. These facilities collectively improved environmental sanitation in the community (Interview 16 and FGDs 3, 2014).

Although the construction of the toilet facility and mechanized borehole are two different initiatives, I discussed them as one integrated initiative since both sought to improve environmental sanitation in the community.



Figure 4.4 Left: Chokor Toilet and Bath Facilities; Right: Pipe Water System
Source: Field Survey, 2014



Figure 4.5 Left: Hand Washing Facilities; Right: Extension Pipe to the Houses
Source: Filed Survey, 2014

Pre-development of initiative

This initiative emerged with an individual decision to construct a traditional pit latrine for his household. This was without the intent of collective action by the community to achieve a collective result. In the course of time, other community members individually adopted the idea without consultation of one another and about six households had constructed pit latrines within six months of initiative emergence. Rains washed these pit latrines away and the idea to collectively construct a *Ventilated Improved Pit (VIP) latrine*¹⁰ emerged. Several community meetings followed this idea. With the moral and financial commitment from community members, an amount was raised to construct the facility.

Development of the Initiative

This phase started with the acquisition of land from the landlords and the design of the facility. During the construction of the facility, AMA intervened and stopped the construction. The proposed location for the construction was along the shoreline of the coast and with anticipated Sea Level Rise, the government restricted construction to a range of 150 metres from the coastline. The objective of AMA was to prevent encroachment onto the coastline and to ensure the sanitary facility meet the planning standards of being located 50 metres from residential facilities. However, since the available land space was inadequate to meet the required planning standards, the community negotiated with AMA for building permit to construct the facility within their residential area in order to make it more accessible. AMA provided technical support and later added a skip container to the sanitary facility for the storage of waste.

Community involvement served to reduce constructional costs by mobilizing community labour and utilizing local knowledge and expertise.

Stabilisation of Initiative

This phase involved the operation and maintenance of the facility. Compared to the above cases studied, there were no exchanged visits and collaboration with NGOs in this community. The

¹⁰ VIP is an improved form of the traditional pit latrine. It has a superstructure, a well-constructed pit/ septic tank and a covered platform. In some cases, the pit is offset from the floor of the latrine and connected to it by a pipe.

sanitary facility¹¹ was categorised as an AMA franchise toilet since AMA granted approval to the new site. It is therefore operated by the community under contract with AMA. The community pays 35 per cent of gross monthly revenue to AMA and the remaining profits belong to the community. AMA is also responsible for emptying of the septic tanks and disposal of refuse at the sanitary site.

The mechanised borehole supplied fresh water required for the basic functioning of the toilet facility as well as for cleaning, hand washing and also offered complementary services like public showers. Also, the disinfectants and other cleaning materials were important for maintaining the facility and basic hygienic conditions necessary for continual improvement in community health.

The sanitary facility deeply influenced both domestic hygiene and general sanitary conditions in the community. Waste disposal had become part of the daily life of community members and practiced as routine activity. In one of the interviews, a community member said:

“Every morning, I dispose my domestic waste at this place, free myself, bath and fetch water for my household. It is a four in one facility. Our kids no longer defecate openly and our main sickness of diarrhoea has reduced. We are therefore doing our best to maintain this facility well since it is through our toiled that we had it” (Interview 18, 2014).

Thus, it can be deciphered from the above statement that, the community had realised the benefits of the facility and therefore strives to maintain it since it is their own initiative and was implemented through their own efforts.

Theoretical Analysis

This section discusses the case study under the three theoretical perspectives of self-organisation explained in chapter two (2)

Dissipative Self-organisation

In this case study, the exchange of information between the community and its external environment occurred when AMA intervened during the project construction. The AMA technical support and expertise served as the ‘in’ information which influenced the community to

¹¹ Sanitary facility is used in order to get a collective name for the individual activities (toilet, bath, a dump site)

change the site for construction. Also, exchanged of information happened internally among community members during community meetings and discussions.

In Bernard Cells, the continuous consumption of energy by the system from its external environment causes it to dissipate energy into the environment. However, in this case, the community received little knowledge from its external environment and the facility was constructed based on local experiences. This, therefore, limited the ability of the community (which is the system in this case) to export information to its external environment. Visitors did not come to the community to learn. Hence, there was no dissipation of knowledge and the community maintained what they had achieved.

Synergetic Self-Organisation

The interaction and interrelation between community members was a significant feature spanning from the emergence of the initiative to its stabilisation. In the phase of initiative emergence, community members interacted during meetings and agreed on certain issues which acted institutions/rules binding and guiding their actions. In the phase of initiative development, the community mobilised communal labour and local knowledge which were needed for the development of the initiative. Finally, some informal rules/ institutions emerged at the phase of stabilising the initiative and helped in its operation and maintenance. These institutions include but not limited to these;

- Every household had to participate in the weekly communal cleaning of the sanitary site and defaulters were charged 10 Ghana Cedi (less than 3 Euro);
- Each community member had to pay an amount of 1 Ghana Cedi before using the facility and (both toilet and showers);
- Households that connected the mechanised water to their houses had to pay a fixed monthly bill of 15 Ghana Cedis.

In this case, these institutions/rules acted as the *order parameter* that guided the behaviour of community members. However, it should be noted that, the ‘enslavement’ in this case is not direct control (strict rules and regulation) but based on the interactive, consensus and mutual agreement between members of the society. These rules/institutions are therefore negotiable.

The interaction and interrelation between community members are also influenced by the legislations of AMA. For example, the application for building permit, meeting the planning standards for public toilets and also the payment of 35 per cent (%) of monthly revenue generated from the toilet facility. In the theory of synergetics, this external influence is the *control parameter*. These external institutions/legislations served as ‘power input’ into the community and causes it to adjust and self-organised under its own capacity.

Autopoietic Self-organisation

Autopoietic self-organisation in this case is related with the self-regeneration and maintenance of the system. This has proven to be significant in maintaining the initiative and the institutions established by the community through its self-organisation process. After the construction of the sanitary facility, the community was able to regenerate certain important rules and their commitment. This is evident in the phase of initiative stabilisation when a community member expressed her utmost desire to maintain the facility. Despite the individual commitment, community members collectively shared local experiences during meetings and most importantly in the phase of initiative development which depended heavily on local knowledge. This learning process enabled community members to self-maintain the initiative after its development.

Lessons from Case Study

- One important lesson is the collaboration between the community and the planning institutions which enabled both parties to achieve their objectives.
- Another is the commitment – social cohesion – among community member. The planning institutions could therefore use this social cohesion as a social capital and an opportunity to mobilise local knowledge and intervene at certain stages of the self-organisation process.
- Also, the voluntary ‘enslavement’ of community members generated more positive feedback in the self-organisation process. This thus, highlighted the essence of dialogue and consensus building since that proved to be effective in the self-organisation process.

4.3 Discussion of Case Studies

From the above discussion, it can be seen that each case study has its unique features depending

on certain past and present contextual factors. However, one unique feature among all the case studies is the fact that, they all relate to structural changes through which certain patterns emerged. This section discusses the case studies from two positions: neighbourhood and regional levels. At a higher level, the processes discussed could be seen as autonomous while internally there is the intent to come to collective action.

The Neighbourhood Level

At the neighbourhood level, all the studied cases exhibited features of continues interaction and interrelation between the actors and their environment (both internal and external since we have accepted that the society is an open system which exchanges energy with it environmental – theory of dissipative structures). These continuous interactions resulted in a disparity between *function and structure* causing the community to adjust. With time, these changes in structure and function caused several activities that resulted in new patterns within the settlements.

For example, in the case of Old Fadama/Agboglobshie, the eviction threats issued to the community changed its structure (unorganised, informal) and function (to mobilise money and promote social cohesion) to a well-organised group advocating and demanding their rights from the government. They collectively acted (through power struggles and demonstrations) against the government to protect their ‘city’. This resulted in pattern formation; which in this case is the formation of the Slum Union of Ghana (SUG). This case study draws spatial planners’ attention to the fact that society (informal settlements) is an open system consisting of different parts, with each interacting and exchanging information with its environment. Changes in the system therefore affect its subsystems and the other systems it interacts with. For instance, activities (demonstrations and court cases) in Old Fadama/Agboglobshie triggered similar actions in other communities it interacted with and resulted to local-global connections.

This neighbourhood, when viewed from a higher level, is one of the informal settlement that emerges by itself and is indeed according to the criteria of self-organisation but at a lower scale Old Fadama/Agboglobshie depicts processes of self-governance in interaction to its environment and planning authorities. The people are organised but not in an institutional design, which is the responsibility of authorities, in this case it is the responsibility of the neighbourhood. Here too, there are issues of self-regulation which makes it robust internally but

also robust in its position to interact with institutions. The settlement of Old Fadama therefore relates to the other two cases as the one being matured more and longer showing the other cases might progress to self-regulatory situations which would make them stronger internally and robust.

The second case – Amui Dzor – was triggered by the socio-economic context of the community. It started as an informal savings group (i.e.: its structure) with the intention of pooling financial resources together (i.e.: function). With time, the continuous interaction between the actors influenced a change in the functionality of the system and a housing cooperative emerged though this was not the initial intention or purpose for their collective action.

Different from the first two cases, the third case (Chokor) emerged spontaneously in response to the prevailing environmental conditions without intent and was adopted individually by community members. However, in the course of time, structure and function changed and the community collectively agreed to combine their efforts and pursue one collective goal – which initially was the construction of the public toilet but due to internal and external interactions they later had a sanitary facility.

The last two neighbourhoods (Amui Dzor and Chokor) are younger and are not that advance in having themselves organised. But if all remain the same, they might as well evolve towards an institutional setting.

It can be followed from the preceding discussion that the continuous interaction and interrelation between actors and their environment in the study communities created a form of ‘transition process’ (Boer and Zuidemar, 2013; De Roo, 2014 unpublished) for the initiatives as structure and function changes over time. Transition here refers to the changing trends and new ways of reasoning and decision making among actors that led to modification in the initiative over time. By implication, spatial planners should not consider these communities as a fixed and static environment but adjust their intervention in relation to a specific situation, the social environment and the dynamic nature of society (i.e.: time factor).

Relating this to the theories of self-organisation discussed (see chapter two), the theory of

dissipative structures draws the attention of spatial planners to the fact that these settlements are open systems that interact with their external environment. In the above case studies, the knowledge and experiences gained through these interaction played useful roles in the development and stabilization of the initiatives.

Also, the theory of synergetic draws our attention to the interaction and interrelation between the residents of the informal settlements and how they collaborate, develop partnership with other stakeholders to collectively achieve certain goals. These therefore highlight the essence of inter-subjective dialogue, consensus and agreements as the best approaches for spatial planners to intervene in these informal settlements. Policy makers, spatial planners and local actors have to find a synergy and focus on the non-linear processes that might emerge; positive effects should be harnessed and negative effects such as emergence of new informal settlements reduced.

Autopoietic self-organisation finally emphasized how self-regeneration and self-maintenance of the settlements contribute to the stabilization of the initiatives. This became possible because the initiatives and the institutions that emerged were not imposed on them but were regenerated through a learning process.

The Regional Level

At the higher or regional level, these neighbourhoods are seen as independent actors in the urban core which do not interact with each other. These cases when viewed from a higher level represent mechanisms of spontaneous, unplanned and unexpected changes in the image of the city (AMA). The cases show self-organising mechanisms which include the following phases of development: weak institutional regulations and repeating failure of planning policies resulting in symmetry breaks; challenges financial crisis and housing problems serving as another trigger; which unintentionally resulted in spontaneous pattern formation at the regional level.

In the case of Old Fadama, institutional rules played a role in creating symmetry breaks, tensions and struggles which triggered adjusting behaviours and resulted to the formation of slum union of Ghana and the creation of access routes. For the other two cases, the challenges of financial crisis and housing problems triggered the construction of the social housing and the

sanitary facility at Amui Dzor and Chokor respectively. Collectively, these cases represent an adjusting process of actors setting up their strategies to comply with existing contextual factors, following an existing non-linear route, which to some extent is unpredictable. This creates a robust pattern at the regional level.

These cases, when treated as collective activities, imply the spatial planner is confronted with a highly interconnected society which evolves through non-linear chains. The dynamics being the weak institutional and planning regulations have triggered and increased interactions and the emergence of autonomous patterns. This gives us a conceptual view of reality existing out of the many layers of the urban environment. Each layer exchanges energy and information with a higher level, which is digested within the system and causes it to adjust or rearrange creating a continuous linkage of subsystems (neighbourhoods) and systems (City or region).

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 Introduction

This thesis examined three cases to identify the mechanisms of self-organisation in informal settlements. The preceding chapter has discussed how self-organisation manifests in informal settlements, its effects on urban development and the implications for spatial planning. It has also linked the theories of self-organisation (dissipative, synergetic, and autopoietic) to the self-organising behaviours of actors in these informal settlements. The output of the chapter supports the argument that self-organisation can serve as an opportunity to urban development. This chapter (5) therefore concludes the thesis and offers a brief summary of the key findings.

5.2 Summary of Findings

The concept of self-organisation in general asserts the spontaneous and autonomous changes as driving forces of aggregate patterns, in social systems. The research results showed that Self-organisation is situation specific and it is triggered by different contextual factors resulting in unique patterns at the regional level. Self-organisation manifested as each neighbourhood strived to cope with certain contextual factors within the city. The dynamics being weak institutional capacity, financial crisis, housing and sanitation problems have challenged these neighbourhoods to develop coping initiatives which collectively form a pattern when viewed from a higher level. These processes are supportive to our understanding of the reality out there – how self-organisation manifest in informal settlements – which evolves spontaneously from human intent and purposeful actions and control. These illustrations would give spatial planners the opportunity to enhance their understanding of the world they operate in.

Self-organisation especially in informal settlements is usually taken in negative perspective. However, this thesis portrays that self-organisation in informal settlements does not always negatively affect urban development but can serve as a solution to some of the many urban problems. In the cases of Amui Dzor and Chokor, processes of self-organisation do not only contribute to the improvement of housing and sanitary conditions of the settlement, in terms of

affordable housing, reduced open defecation and proper waste disposal, but also in the improvement of the local economy of these settlements in terms of the revenue generated from these initiatives. The case of Old-Fadama/Agbogbloshie though has progressed towards an institutional setting, attracted socio-economic investments to the settlements. When viewed from the city scale (regional level) these three cases jointly form a pattern which positively affect the whole system of the city

In relation to planning, the interaction between these settlements and government institutions revealed that central government policies and guidelines, to which actors and citizens must submit themselves are fairly incapable of handling self-organising behaviours as shown in the case of Old Fadama/Agbogbloshie. This brings us back to the question, what implication can be drawn for spatial planning?

Boonstra and Boelens (2011) argued that contemporary planning approach should be outside-in (spatial planners been part self-organising process open their view to local initiatives), instead of the predominately inside-out approach (planning from government-led perspective and out to the community) of planners. However, the reality (as discussed in chapter 3) in Ghana is that, the ‘outside-in’ approach cannot be wholly implemented since central government always has certain development targets to meet. Hence, I agree that spatial planners should integrate both approaches (inside-out and outside- in) and integrate themselves as actors in the self-organising process (Boonstra and Boelens, 2011).

Also, because self-organization cannot be controlled internally (De Roo, 2014) spatial planners have to influence the process through conditioning the system and the process of change. I assert that, since the self-organising behaviours of the actors in the city are context specific, the planning approach should also be situation specific. Planning regulations, which predict a desired future to achieve should be flexible. Also, institutional rules and instruments should be reconstructed to accommodate the actions of the independent actors who adjust their behaviours under the prevailing environmental conditions.

5.3 Recommendation for Spatial Planners in Ghana

The research revealed that, self-organisation, especially in developing countries like Ghana is a

potential for it to develop more than it does now. But the treasure – self-organisation – remains hidden to spatial planners. Understanding mechanisms of self-organization may enable spatial planners in triggering and influencing processes of self-organization within the daily environment in tandem with planning regulations for the good of society.

Therefore, in dealing with mechanisms self-organization processes in informal settlements especially those in line Medium Term Development Plans (as shown in the cases of Amui Dzor and Chokor) local authority may support the process by triggering or stimulating the process with programmes and incentives. As shown in the case studies, self-organization is situation specific, local development authorities can therefore optimise processes of self-organisation by creating external conditions, which may stimulate or trigger the process of self-organisation at the community level. For instance, community-led social housing among slum dwellers could be coined into a policy discourse. Through media publication and discussion, this can influence other settlements to create same conditions. With this, self-organisation processes will be in line with institutional trajectories. Also, the content and process of MTDPs will co-evolve, hence, enabling self-organisation to enfold in support of urban development.

Self-organising social agents however do not behave freely as they are being constrained and enabled by prevailing conditions in various ways. And these conditions could be under change as well (De Roo, 2014). Thus, MMDAs should monitor the process in order to be able to act accordingly to agents' behaviours in the process. Monitoring should be done by the local authorities (Town/area councils¹²) through formal/informal community meetings and discussions depending on the conditions of the settlement.

Self-organization is consequence of social complexity (De Roo, 2014). Spatial Planners in Ghana, especially officials of the Town and Country Planning Departments, local folks and entrepreneurs have to collaborate and find a synergy between plan, its content and the spatial qualities of each community. They have to understand and appreciate the interdependency between planning regulations and self-organising behaviours. And focus on the non-linear patterns and processes that emerge, harnessing the positive effects while minimising the negative impacts.

¹² Town and area councils in Ghana are sub-units of the MMDAs in the various towns and communities within the District Assembly. The town/area councils are implementing agencies of the District Assemblies

This would provide a robust condition for integrating spatial planning and spontaneous processes in Ghana.

5.4 Future Research

This thesis discussed the contribution of self-organisation in informal settlements to urban development in Ghana. Initially my main understanding of self-organisation in planning centred on Boonstra and Boelens (2011) definition of self-organisation in urban development as “initiatives for spatial interventions that originate in civil society itself, via autonomous community-based networks of citizens, outside government control.” (p. 100).

However, in conducting the research it became evident the concept is more complex than Boonstra and Boelens definition suggest. Informal institutions (rules and norms) emerged within the studied neighbourhood in their self-organisation processes in order to stabilize the initiative. This raised mind-boggling thoughts on whether the self-organising processes in these settlements could lead to processes of self-governance and self-regulation in the future, i.e., what happens after achieving collective results? Is self-organisation opposite to planning? And how would spatial planners spot self-organisation processes in urban setting? The answers to these questions will uncover the key mechanisms of the concept of self-organisation within planning practice and theory and enable spatial planners to find innovative solutions to the myriad planning problems confronting them. Discussing the relation between self-organisation with content of plan, abstract reasoning on this is beginning to make sense among spatial planners and planning scholars, which underline the importance of learning and future research. Future research can also be conducted to explore the phenomenon of self-organisation in different informal settlements. The results of this research may give a holistic insight on phenomenon of self-organisation.

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APPENDICES

APPENDIX A

INTERVIEWS CITED IN TEXT

1. Town and Country Planning Officer, Accra Metropolitan Assembly, 16/04/2014
2. Municipal Planning Officer, Ashaiman Municipal Assembly, 17/04/2014
3. Chairman, Slum Union of Ghana, 23/04/2014
4. Secretary, Slum Union of Ghana, 23/04/2014
5. Vice Chairman, Slum Union of Ghana, 23/04/2014
6. Anonymous Community Member, Agbogloshie/Old Fadama, 24/04/2014
7. Anonymous Community Member, Agbogloshie/Old Fadama, 24/04/2014
8. Anonymous Community Member, Agbogloshie/Old Fadama, 25/04/2014
9. Anonymous Community Member, Agbogloshie/Old Fadama, 25/04/2014
10. Anonymous Community Member, Agbogloshie/Old Fadama, 26/04/2014
11. Executive, of Amui Dzor Housing Project, 28/04/2014
12. Anonymous Community Member, Amui Dzor, 29/04/2014
13. Director, Peoples Dialogue on Human Settlement, 30/04/2014
14. Anonymous Community Member, Chokor, 1/05/2014
15. Anonymous Community Member, Chokor, 2/05/2014
16. Anonymous Community Member, Chokor, 2/05/2014
17. Anonymous Community Member, Chokor, 2/05/2014
18. Anonymous Community Member, Chokor, 3/05/2014

APPENDIX B
FOCUS GROUP DISCUSSIONS

1. Focus Group Discussion, Agbogloshie, 27/04/2014
2. Focus Group Discussion, Amui Dzor, 30/04/2014
3. Focus Group Discussion, Chokor, 3/05/2014

APPENDIX C
RESEARCH QUESTIONNAIRE

PART I COMMUNITY INITIATIVE

Q1. Can you give a brief profile of this community?

A: *Old fadama is a Cosmopolitan community with a population of 79,684(31.3 hectares)*

Q2. Do you under take some initiatives to help your selves in this community? Yes or No

If yes, mention some of them

A: *Yes*

- (1) Creating of access roads in the community
- (2) Building of public bath-houses
- (3) Provision of dormitories
- (4) Putting up permanent structures
- (5) Formation of the SLUM UNION OF GHANA

Q3. How did these initiatives emerge?

A: *(1) SLUM UNION OF GHANA (SUG)*

After series of threat of evictions and demolition of some slums, I thought there was the need for a union to have a strong and united voice to fight forced evictions. This idea was embraced by residence of all the slums I visited and shared the idea. That is how, in brief the Slum Union of Ghana emerged.

(2) Creating of Access roads

It was almost impossible for the fire tenders to come into the community to quench fire whenever there was fire outbreak. It was therefore decided by the leadership of the community to create access roads wherever and whenever there was fire outbreak. This idea was seen as a laudable one by majority of the residents of the settlement.

(3) Putting up of Concrete buildings

Because of the wooden structures, we are often faced with fire outbreaks and the effect is always huge. We therefore advised that whenever there was fire outbreak it should be replaced by concrete buildings to curb the fires

Q4: What were the achievements attained by the community?

A: The access roads have made it possible for the fire tenders to move into the community when there is fire outbreak.

Q5: Where there certain challenges you encountered? If yes, mention some of them

A: Because creating of the roads affected some structures, the owners were seriously against it, and so fought back. The authorities were also against the putting up of the permanent structures so tried to stop us

PART II INSTITUTIONAL INTERVENTIONS

Q1. How is the relationship between this community and government planning institutions?

A: There is no relationship at all. We are far apart.

Q2 Are you involved in the planning processes of the Assembly? Yes or No

A: No

a. If yes, how does it help this community

b. If No, why?

A: We believe they are deliberately trying to avoid us so that we cannot claim anything from them. They claim we are squatters and therefore should have no stake in the planning

c. How does this lack of participation affect you as a community?

A: It makes us live in fear because we don't know what the next move will be. It makes it difficult for us to plan our lives.

Q3. In Part I, you identified some initiatives you undertake to help yourselves and the development of this community.

a. Do the government planning institutions support you to undertake these activities?
Yes or No

A: No

If yes, explain how?

b. Do the planning regulations of the assembly constraints efforts in undertaking these activities? If yes, How?

A: We were served with letters to explain why we were putting up permanent structures without permit. They also came physically to write on the structures- STOP WORK.

Q4: Apart from the government institutions, have you received support from other organizations or institutions? If yes,

Mention the organization and type of support received

A: 1. *Slum dwellers International (3.D.I), They finance an enumeration in 2009*

2. *Amnesty International (A.I) they gave us series of training and workshops on human right education.*

3. *SISS- They provided skills training for the youth for free*

Q5. ANY OTHER COMMENTS

Note:

The output of the questionnaire on community initiatives influenced the researcher’s decision to select one initiative from each community since there were several initiatives. This is then discussed during the focused group discussion, which comes after the personal interviews. Above are some responses of Mr. Philip Kumah (Old Fadama/Agbogloshie). The same questionnaire is used for the other two communities.

INSTITUTIONAL QUESTIONNAIRE FOR NON-GOVERNMENTAL ORGANISATIONS

1. You have been working with this community for sometime now, In what ways do government institutional interventions/regulations;
 - a. Stimulate or promote the initiatives of communities towards their community development
 - b. How do these interventions constraints the initiatives of the community?
2. Are these informal settlements involved in the planning activities of the government?
Yes or No
 - a. If yes, how
 - b. If No, why
3. In what ways do your institution support these informal settlements in undertaken their own initiatives?
4. What are the achievements so far?
5. What constraints do you encounter in the process of supporting these informal settlements?
6. ANY OTHER COMMENTS

RESEARCH QUESTIONNAIRE FOR PLANNING INSTITUTIONS

1. Is there a spatial planning policy in Ghana? If yes,
How does it support informal settlements?
How does it regulate the emergence of informal settlements in the future.
2. Does your municipality have a Spatial Development Plan? If yes
How does it regulate the expansion of informal settlements or the emergence of new informal settlements in the future?
3. In what ways do you involve residents of informal settlements in the spatial planning process of the municipality?
4. Do residents of informal settlements take any initiatives (self-organizing process) to help themselves and the development of their settlements? If yes,

How do you support them during these processes?.

Do these activities conflict with spatial development plans? If yes, explain how.

How do you regulate them?

5. What constraints do you face when;
 - Supporting these informal settlements
 - Regulating the activities of these informal settlements
6. ANY OTHER COMMENTS

NOTE: Many issues came up during the discussions. These are recorded on my phone.