



**- Master Thesis –**

**SELF-ORGANIZATION AT THE NEIGHBORHOOD LEVEL  
COMPARISON OF THREE CASE STUDIES  
IN JAKARTA, INDONESIA**

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*This thesis is written with love,*

*...for my husband,*

*...my two little sons,*

*...my baby,*

*...and my parent.*

## SUMMARY

Self-organization is contemporarily seen as a solution to complex planning issues which hardly solved by rational scientific way of thinking. Phenomena of self-organization can be seen mostly in developing cities, although mostly in negative senses. This research is dedicated to show and understand phenomena of self-organization in developing city, particularly Jakarta, which contribute positively to the evolution of urban development. The phenomena are observed and understood from three case studies at the neighborhood level, which have different historical development of self-organization, in terms of actors, aspect of development, etc. Those three case studies are explained using three theories of self-organization, i.e. dissipative structure, synergetics and autopoietic, which has different emphasis on how self-organization process may be understood. Theory of dissipative structure provides explanation on external relation between the system and its environment, while theory of synergetics and autopoietic help to gain our understanding on internal relation between elements of the system. Rather different, synergetics emphasizes on how do the elements of the system interact and interrelate and thus stimulate positive feedback in the system, while autopoietic emphasizes on regeneration of ideas, decisions, actors and roles through learning process which may maintain the structure that has been produced.

As conclusion of this research, I argue that interplay of those three manifestations of self-organization is important in self-organization process, in order to reach and maintain the desired state. Furthermore, I formulate the importance into several points of internal and external conditions which may stimulate and strengthen the process of self-organization.

\* \* \*

## PREFACE

Self-organization is an interesting phenomenon which currently is widely observed, not only in natural science e.g. physics, biology, chemistry, etc., but also in social science including planning. Derived from complexity theory which enhances our understanding of the world, self-organization becomes one of potential solution to deal with our complex world.

Understanding self-organization, especially in developing city is interesting for me, since I live in one of The Third World country, Indonesia, which I believe has a great potential to develop more than it does now. But, the treasure remains hidden since we have limitation in exploring and exploiting them. This research is intended to explore one of its - what I called - hidden treasure: phenomena of positive self-organization. In developing city like Jakarta, the capital city, phenomena of self-organization can be seen in great numbers although mostly in negative senses. Therefore what I want to do in this thesis is showing the positive manifestation of self-organization which may become an alternative to improve the quality of life in urban area. Ultimately, I want to open everybody's mind which may still see formal design and planning as the only source of order. Instead, as shown in many field of sciences, self-organization process may also produce structure in macro level, out of interaction of elements in micro level. As in phenomena of butterfly effect, small changes may produce tremendous results which sometimes beyond our understanding and expectation.

In writing this thesis, I wanna thank my supervisor, Prof. Gert de Roo, who is one of great observer and theorist of complexity theory in planning. I was so honored to have him supervised my work, due to his deep understanding and outstanding thinking in the world of complexity, which always beyond my narrow perspective. And above all things, I want to appreciate him more because of his detail checking to my grammar error, considering his busy time to do other more important things.

I also want to say my biggest thank to my family, because I finish this thesis with my love, laugh and tears with them, although only through Skype. My lovely husband, who supports me in writing every word of my thesis, and who dedicated his three weeks of time to accompany me doing the research in Indonesia. My two little sons, who motivate me to finish this thesis as soon as possible so I can go back to my hometown and see their little face every morning when I wake up. My baby, who is still in my belly, who everyday accompanies me writing the thesis in the library, sometimes until nobody else left except two of us. And last but not least, my parent, who always give me chance to reach my dream, who always there to support me and take care of my little family. This thesis is for your love and pride.

Finally, I realize this thesis will never be perfect and many aspects can still be improved. But, hopefully this thesis will be useful for enriching literatures of self-organization and encouraging other researchers to develop and improve what I have done in this thesis.

*Groningen, in a warm summer of August 2013*

*Mira Maryana Hidayanti*

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# CHAPTER I

## INTRODUCTION

Urban planning faces greater challenge due to the increasing complexity of planning issues to be solved. One of the challenges and –at the same time– a solution, comes from self-organization which takes place at the micro level and effecting urban development at the macro level. Due to its detachment from formal urban planning system, self-organization in urban area can be seen as challenges when it resulting negative effect to urban development, for example when it creates unwanted image of the city as in the case of slum area. However, even in the case of slum area, self-organization still shows positive contribution in solving the lack of housing for the citizens.

In developing cities, phenomena of self-organization tend to dominate the development of urban area although mostly in negative senses. “The third world cities are traditionally known for their inherent chaotic and discontinuous spatial patterns and rapid and unorganized development process.” (Barros & Sobreira, 2002, p. 1). In other words, self-organization tends to be seen as weakness and issue rather than strength and solution. Therefore this thesis is written, to show and discuss phenomena of self-organization at the neighborhood level<sup>1</sup> (micro level) which contribute positively to urban development at macro level. By understanding the notion self-organization in positive sense, it can be used optimally as an alternative to solve urban issues, especially in developing city like Jakarta.

### I.1. SELF-ORGANIZATION AND URBAN PLANNING

Early 21<sup>st</sup> century has been an important threshold in human civilization, when more than 50% of human population living in urban area (UN, 2010). Urbanism becomes center of human life and therefore urban planning becomes important field in serving the needs of multibillion people living in urban area. However, urban characters and issues are dynamically changing and urban planning continually co-evolves with the changes. Current approaches in urban planning are the result of long journey of evolution which can only be understood by understanding its historical development.

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<sup>1</sup> Neighborhood level in this thesis is defined as *Rukun Warga* (RW) which is a social organization under *kelurahan* level (lowest level of government), consists of several *Rukun Tetangga* (RT) or sub-neighborhoods. There is no particular regulation on numbers of inhabitants, and area of the RW, but in this thesis, case studies chosen have numbers of inhabitants ranging between 2000 – 4000 inhabitants, 600 – 900 households, with area of 3 – 26 ha.

From early 20<sup>th</sup> century until now, urban planning has been through two significant shifts on its development (Taylor, 1999). The first shift took place on the first half of the century, from urban planning as 'architecture writ large' to urban planning as 'rational scientific process' (Taylor, 1999). The notion 'architecture writ large' was used because urban planners on that age were mostly architects which had more focus on physical form of urban area, and did not give much attention to planning process. Therefore, it was also called 'substantive – qualitative planning' (Alfasi & Portugali, 2007). Daniel Burnham's City Beautiful Movement (1890s) and Le Corbusier's City Efficient Movement (1910s) were two most significant theories that influenced urban planning on that age. Besides their similarity on planning focus, those theories also shared same principle in seeing plan as future vision, which make them to be called 'utopian planning' (LeGates & Stout, 1998; Portugali, 2000).

Year 1960s, systems theory was introduced and influenced urban planning as well. The main influence of systems theory to planning, is an acceptance that cities and regions are complex sets of connected parts, which are dynamic and concerned with change (Allmendinger, 2009). In dealing with such a complex system, planners on that age introduced rational scientific approach in planning, which tended to reduce complexity of the system, "for if city planning were trying to control and plan complex system, dynamic systems, then what seemed to be required were rigorously analytical, 'scientific' method of analysis." (Taylor, 1999, p. 100). This reductionist point of view was influenced by Newtonian-mechanistic paradigm where every complex phenomenon could be understood by reducing them into their smallest components, which then the components are tried to be described as complete, objective, and deterministic manner (Innes & Booher, 2001; Heylighen, 2008).

However, rational scientific approach in urban planning also got several criticisms due to its failure in tackling urban issues which are getting more complex. A criticism came from Marxist view, supported by e.g. David Harvey and Manuel Castells, which doubted technical rationality in planning, and sued planning as having influence from certain interest and parties (Portugali, 2000). This movement also strived for more humanistic city.

A communicative approach in planning was then introduced as to deal with complexity and uncertainty while also serving multi-interests and multi-values of several actors and stakeholders. Intense discussion on this approach in 1990s, by e.g. Patsy Healey and John Forester (Allmendinger, 2009), marked the second shift in planning from technical rational to communicative rational.

However, communicative approach in planning is still on-going discussion. Time consuming process and value-laden characteristic of the approach tend to be the target of criticism. The process hardly independent from government's influence, and even in some practices only becomes formality, to get

legitimacy from public. The criticisms gave rise to other approaches in planning, including self-organization as one positive feature of complex system (Boonstra & Boelens, 2011).

Self-organization is a spontaneous emergence of global structure out of local interactions, independent from external forces (Portugali, 2000; Heylighen, 2008). This means, under dynamic relation with its environment and dynamic interrelation between the elements, complex systems could manage themselves in a process of self-organization, to create new emergence structure. These phenomena of self-organization also tend to be existed 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 20<sup>th</sup> century" (Portugali, 2000, p. 49).

Self-organization in planning is also associated with learning processes and innovation through dynamic interaction between stakeholders (Zuidema & Roo, 2004). Actually, this also implies the use of a communicative approach in planning as to encourage the learning process, as being emphasized in Healey's collaborative planning and Innes' consensus planning. But furthermore Boonstra and Boelens (2011) differentiated the notion collaborative participation and self-organization. Collaborative participation refers to involvement of community in planning process which is initiated by government, whose objectives and procedure to do the participation are set beforehand, in a regime. While in self-organization, the initiatives and processes are taken by members of society, sometimes in collaboration with NGO or business, independent of government policies and detached from participatory planning procedures. In this sense, the notion self-organization in urban development is understood as "initiatives for spatial interventions that originate in civil society itself, via autonomous community-based networks of citizens, outside government control." (Boonstra & Boelens, 2011, p. 113).

In many urban areas, local initiatives are already there and contribute in shaping the face of the city. In developing country, as in Indonesia, self-organization mostly exists due to limitation on government's funds and action in planning and developing every corner of the city. The manifestations, indeed are mostly shown in negative senses, as in the case of squatter settlement. But actually, self-organization can also manifest in positive senses, as currently discussed in many literatures. In this sense, self-organization may be seen as a solution to complex urban issues, besides formal planning.

This thesis is thus intended to explore the phenomena of self-organization, especially in a developing country, in order to find to what extend these phenomena could be seen as strength and moreover as solution to urban problems. In answering the question, I focus my research in Jakarta, as the capital

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city of Indonesia where most of the urban issues exist, and moreover at the neighborhood level as the most potential level for self-organization to exist.

## **I.2. OBJECTIVES AND RESEARCH QUESTIONS**

Objectives of the research are threefold, i.e.:

- 1) This research is aimed to give more understanding in the phenomena of self-organization in urban areas, especially in developing countries;
- 2) This research is aimed to increase awareness (of government) on positive contribution of self-organization process at the micro scale (neighborhood level) to urban development at the macro scale.; and
- 3) This research is aimed to give insight and input to further development of urban area in Jakarta, and moreover in Indonesia.

As to achieve the objectives of the research, there are two main research questions to be answered, i.e. :

- 1) How can self-organization at the neighborhood level enhance urban planning and development in Jakarta?**
- 2) Which internal and external conditions enhance or constrain the process of self-organization?**

Those two main research questions are divided into several sub-questions, in theoretical element, empirical element, and synthesis between theoretical and empirical element, i.e.:

### 1) Theoretical Element

Theoretical element on this research is 'self-organization in planning', which is an alternative approach in coping with complexity and uncertainty in urban life.

Sub questions in theoretical aspect are:

- What is self-organization?
- What are principles of self-organization?
- What is self-organization in planning?
- How can self-organization deal with complexity and uncertainty in urban planning?

### 2) Empirical Element

Empirical element on this research is 'neighborhood planning in Jakarta'. Jakarta is chosen because this city shows the most rapid urbanization, and appears to have the most phenomena of self-organization among other cities in Indonesia.

Sub questions in empirical aspect are:

- How is government system in Jakarta?
- How is planning system in Jakarta, especially in relation with neighborhood development?
- How does local initiative at the neighborhood level relate with the planning system?

### 3) Synthesis between theoretical and empirical

Self-organization and neighborhood planning in Jakarta are synthesized in the context of practice.

Sub questions in synthesizing aspect of the research are:

- To what extent self-organization contribute to urban planning and development in Jakarta?
- What are internal conditions (conditions inside of the neighborhood system) which support/constrain the process of self-organization?
- What are external conditions (conditions outside of the neighborhood system) which support/constrain the process of self-organization?
- What should be the role of government in dealing with this phenomena of self-organization in urban area?

From 2 (two) main research questions, there are 3 (three) hypothesis developed which need to be clarified and extensively explained as part of the answers, i.e.:

- *Hypothesis 1 – Phenomena of self-organization, especially in developing city like Jakarta can be seen as solution to urban problem rather than as the problem itself.*

Currently, urban issues tend to be more complex, characterized by its indirect causal relationship which may not be understood and solved by rational scientific process. Self-organization is a feature of complex system which helps us understanding those indirect causal relationships, and thus become an alternative approach in solving complex urban issues.

In developing cities, phenomena of self-organization are mostly understood in negative senses, due to their incompatibility with city plan, e.g. in the case of squatter settlement. Encounter those opinion, there are several researches on self-organization (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; Salingaros, et al., 2006).

Seeing from different perspective of self-organization, this thesis also explores the positive side of self-organization as can be seen in 3 (three) case studies. Furthermore, it also explores how self-organization at the neighborhood level can be strengthened in a developing city like Jakarta. This hypothesis will be clarified by analyzing the role and contribution of self-organization process in urban planning and development as to solve many urban issues in Jakarta.

- *Hypothesis 2 – If self-organization to be applied, there are several internal conditions in the community that need to exist first as the capital of the process.*

Not all initiatives at the local level can be successfully continued as self-organization process. In a complex system, it needs *positive feedback* from part of the system (the agents) which strengthens the initiatives (seen as perturbation to the system) and thereby new structure emerges out of the interaction and interrelation between agents. In social system, the positive feedback can be the result of social cohesion in the community. But further questions to be clarified is what type of social cohesion can be useful for self-organization process and in contrary, if that social cohesion does not exist, is self-organization still possible to take place? Answer to these questions can be arisen from comparison of case studies.

- *Hypothesis 3 – If self-organization to be applied, there are several external conditions and circumstances needed as to support the process and make the process fruitful for urban development.*

Except internal capital, self-organization is also possible to take place if there are several external conditions in the environment that support, or at least do not restrict the initiative to emerge and develop its positive feedback. These external conditions can be in forms of law and regulation, roles and responsibilities of other parties, e.g. NGO, market parties, and also government. Clarification to this hypothesis could be a good input to the role of planners in dealing with complex system.

### **I.3. RESEARCH METHODOLOGY**

This research is aimed to enhance our understanding of the process of self-organization as social phenomena. Therefore, detail observation and analysis of the concrete phenomena in real-life context are required. In this situation, case study methodology is the best approach in answering the research questions and clarifying the hypotheses. It is important in giving the holistic view of the process: “The detailed observations entailed in the case study method enable us to study many different aspects, examine them in relation to each other, view the process within its total environment.” (Gummesson, 1988 p. 76 as cited in Meyer, 2001). Case study methodology is also aimed “to provide an analysis of the context and processes which illuminate the theoretical issues being studied.” (Hartley, 2004, p. 323).

Three case studies are used in this research to gain more understanding about phenomena under study. Those three case studies are chosen based on several criteria, which are developed beforehand. Those criteria are, i.e.:

1) Best practices in Jakarta.

This research is focused in showing positive impact of self-organization process in developing city like Jakarta, which continually changes and thus needs to enhance its way in understanding urban phenomena such as self-organization. Due to limitation on government's resource to plan and control all the development in urban area, this study of best practices of self-organization could be a good input for adjusting the planning approach, and moreover the role of government (and planners) in dealing with complex urban issues.

2) The self-organization processes should have resulted substantial effects in the neighborhood, in forms of physic/visual, spatial, and/or institution.

Self-organization at the neighborhood level is a continue process with no end. Therefore, in order to understand the process, case study chosen should have shown some (positive) changes, especially in relation with space. The changes can be in terms of land use, visual image of the neighborhood, and/or institutions. This criteria is needed to make the explanation on each case study has clear time frame, and thus the analysis can be focused only on that time frame.

3) The process can be autonomous self-organization (initiated by the community) or induced self-organization (stimulated by NGO, or other parties outside the neighborhood system).

Self-organization does not necessarily be fully initiated by local community, it can also be the result of stimulation from NGO, market, or even government in terms of programs, finances and/or policies. This condition is not against the principle of self-organization. However, it has to be ensured that those external agents do not 'force' the process of self-organization. In other words, the communities act in the basis of their self-interest and self-motivation.

Based on those criteria, case studies chosen are:

1) RW 08 Banjarsari, South Jakarta

This is a case study which represents self-organization process in terms of environment and economic upgrading. The process was started by initiative of several housewives in 1992 to make their house and the environment 'green' by planting many trees in front of their house. The attempt took approximately 10 years to make the whole neighborhood 'green' and therefore made the neighborhood is widely known as 'green village'. The development of initiative was supported by UNESCO and NGO in 1996 – 2003, which enriched the process by introducing integrated waste management to the neighborhood.

2) RW 03 Rawajati, South Jakarta

This is a case study which also represents self-organization in urban improvement in terms of environment and economic upgrading, without any significant involvement from external parties

(as in the case of Banjarsari). The initiative was started in 2001 by caretakers<sup>2</sup> of RW, RT and PKK and took less than 5 (five) years to make the neighborhood physically improved, and thus received the award as the best neighborhood in 2005 and assigned as agro-tourism kampong in the same year.

3) RW 09 Pondok Kelapa, East Jakarta

This is a case study which represents self-organization in provision of public facilities, in forms of community center and communal green space. The initiative emerged in 2003 from caretakers of RW to build the community center in the neighborhood. The construction finished in 2006. Another initiative emerged in 2008 from the same caretakers of RW to develop communal green space, which then finished in 2009 and made the neighborhood chosen as the best neighborhood in Jakarta (2009) and second best neighborhood in Indonesia (2010).

Furthermore, in order to get detailed information of each case study, qualitative method is used in data collection and analysis. According to Gaber (1993), there are several reasons to choose qualitative method rather than quantitative method. In this research, there are two main reasons. First, it better represents 'real-life activities' from the subject's perspectives. In this research, it is important to understand the process of self-organization from the insider's perspective, i.e. key actors who involved in the process, because it can reduce bias and distorted information if collected from secondary sources. Second, it can provide thick description of the situation under study, "which describes and probes the intentions, motives, meanings, context, situations of action" (Denzin, 1989, p. 39 as cited in Gaber, 1993).

However, qualitative method also has several problems, especially in relation with internal validity and external validity. Problem of internal validity in qualitative method is difficulty in determining if a researcher is getting a representative picture of what he/she is studying (Gaber, 1993). Encountering this problem, the research use several methods of data collection which are useful for cross-checking every information from sources.

In relation with external validity, the problem is difficulty in generalizing observations to theory. In this research, this problem is encountered by giving theoretical inference rather than empirical generalization, as conclusion. Theoretical inference means the conclusion is drawn from the features of local events which are observed and described (Hammersley, 1992, p. 91 as cited in Gaber, 1993). It means the conclusion is context-dependent and is not intended for making empirical claims about categories of phenomena. However, this research -with three contextual case studies- may contribute

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<sup>2</sup> Caretakers are some people chosen and trusted by community members to manage the social organization in neighborhood level (RW, RT, and PKK). Caretakers consist of head (leader), secretary, treasurer, and several sections.

to the broader discussion of self-organization process, where generalization can be made in that broader context by comparing similar researches and studies.

In collecting data, and in order to encounter the problem of internal validity described above, this research use “between – method triangulation” which is a combination of dissimilar method to examine the same phenomena (Gaber, 1993). The use of different methods in this research is to ensure data and information collected can be cross-checked and thus valid to be used in this research. In addition, by combining methods, weakness of one method can be overcome by other methods. However, different methods may give different information on the same aspect. Which information to be used for the research depends on which source is stronger and more reliable in giving such information. For example, information about historical journey of self-organization process is more reliable to be collected from key actors as primary sources, rather than news articles and other written sources.

Methods of data collection in this research are, i.e.:

1) Desk research, to collect and gather data from documents, literatures and internet.

Desk research is done in collecting relevant literatures of self-organization and collecting data for case studies. In this research, relevant literatures of self-organization are collected in forms of hard sources e.g. books and seminar proceeding, and soft (electronic) sources e.g. journal articles, e-books, seminar papers, etc. Those hard and soft sources are searched through library catalogue of University of Groningen, Google search and Google Scholars, using certain keywords, e.g. self-organization, complexity, self-organization in planning, dissipative structure, synergetics, autopoietics, etc. Moreover, it can also be searched from bibliography or references of related sources. Relevancy of those literatures to the broader discussion of self-organization and furthermore this research, can be determined by seeing the information on how many times those articles or books have been cited (the information can easily be seen in Google Scholars).

In collecting data for case studies, internet is also the main source. Mostly the information is collected in forms of news article and reports. In searching for the information, the keywords used are not only in English, but also Indonesian, e.g. *kampong hijau* (green neighborhood), *pengolahan sampah terpadu* (integrated waste management), *iniatif local* (local initiative), etc.

In using news articles and reports, it is possible to get different even contradicting data and information from several sources, therefore it is important to clarify them by getting the original information from the actors themselves, as attempted to do in next method of interview.

2) Interview, to get insight from the community members and all stakeholders involved in order to get original information and perception of the cases under research.

For the interview, interviewees are chosen who were directly involved in the process of initiative development, including caretakers of the neighborhood and community members. They were interviewed in informal way, with a relax circumstances, free flowing or semi-structured questions and based on one-on-one interaction. Semi structured interview is chosen to make sure all the data needed in this thesis are completely collected while also giving more space for improvisation which may bring unexpected data to emerge (O'Leary, 2010). One-on-one interview is chosen to allow interviewee expressing their answers and thoughts freely without interference from others (O'Leary, 2010).

In each case study, minimum of two persons are interviewed with more or less the same questions. Besides completing and enriching the data needed, the answers from two interviewees can be compared: same answers may provide stronger story and argument of each case study, while different answers should furthermore be clarified and confirmed with other sources or methods.

3) Field observation, to get a concrete picture of current condition, in each of case study. Due to limited time, field observation is done without any predetermined criteria. It means the observation is done to record information as much as possible. Later, the information is processed and decided which can be used to support the research.

Furthermore, in this research, field observation is done to witness current condition and some events in the neighborhood in relation with self-organization process (if there is any). Although without any predetermined criteria, but input from the interview process can be useful as basis for doing the field observation.

The results of desk research are resumed and transcripts of the interview are made to simplify the process of analysis on later stage. The analysis is done for each case study in several steps. First, is to make the historical line of self-organization process from several interviews which may strengthen or contradict each other. Differences and contradictions found should be noted and clarify with other sources, e.g. news article, report, etc. Second, the historical line are divided into 4 (four) phases of historical development: pre-development, development, stabilization and declination, by using criteria which will be explained briefly in Chapter III. Third, 3 (three) theories of self-organization are used to explain historical analysis which developed earlier in step 2 (detail explanation on this will be given in Chapter III). Forth, finding in each case study is formulated based on strengths, weaknesses and issues identified in the historical and theoretical analysis. Finally, comparisons are made within those case

studies in order to get general findings and conclusion in answering the research questions and clarify the hypotheses.

#### **I.4. THEORETICAL FRAMEWORK**

There are several theories of self-organization which influenced planners' view on urban area, e.g. Ilya Prigogine's dissipative structures, Hermann Haken's synergetics, and Humberto Maturana's autopoietic (which later translated into social science by Niklas Luhmann). Those three theories share same philosophical concept of self-organization, yet in different emphasis.

The notion 'dissipative structure' has its emphasis on "...close association, at first paradoxical, in such situations between structure and order on one side, and dissipation or waste, on the other." (Prigogine and Stenger, 1984 as cited in Portugali, 2000, p.52). This theory also explains emergence of new dynamic states of matter out of interaction between the system and the outside world. Focus of this theory is on the external orientation of the system. Emphasizing different aspect of self-organization, synergetics theory -as the name indicates- discusses heavily on the "interrelations, interaction, and synergy among the many parts of the system and its overall structure and behavior." (Portugali, 2000, p. 54). It focuses on the internal orientation of the system. Completing those two theories, autopoietic has its emphasis on the inward orientation of the system, which is "about self-maintenance, identity forming and stabilization, and reproduction." (Jantsch, 1980; Luhmann, 1995, as cited in Meerkerk, Boonstra, & Edelenbos, 2012).

Different emphasis of those theories is used in explaining and understanding the case studies discussed in this thesis. Theory of dissipative structure is used to understand external orientation of the neighborhood system: relation and interaction between the neighborhood and its external environment. Synergetics theory is used to understand internal orientation of the neighborhood system, in terms of interaction and interrelation between community members. The last, autopoietic theory is used to understand internal orientation of the neighborhood system, in terms of regeneration of actors, activities, ideas and decisions.

Theoretical framework and flow of this research is illustrated as follow.

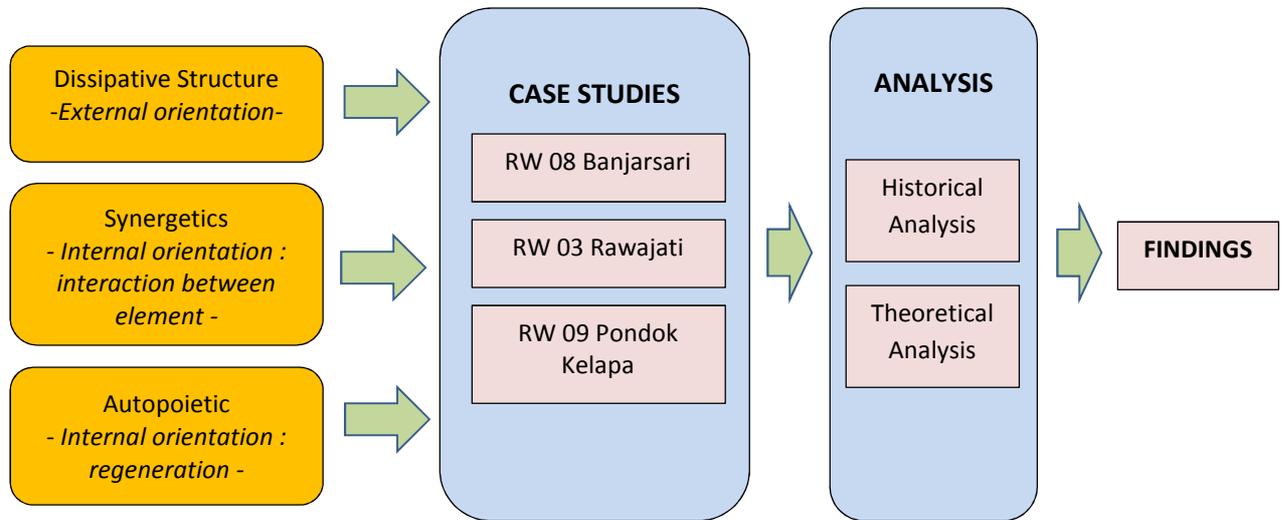


Figure I. 1. Theoretical Framework and Flow of The Research

## I.5. STRUCTURE OF THE THESIS

This thesis consists of 4 (four) chapters, i.e. :

### I. Introduction

*This chapter consists of short description on contextual background, , research objective, research questions, hypothesis, theoretical framework, scope of the research, research methodology, and structure of the thesis.*

### II. Literature review

*This chapter consists of literature review on several theories of self-organization and self-organization in planning.*

### III. Case Studies and Analysis

*This chapter starts with explanation on the government and planning system in Jakarta, completed with description and analysis of three cases under study, and ended with comparison of three case studies.*

### IV. Conclusion

*This chapter provides brief answers to the research questions and hypothesis.*

\* \* \*

## CHAPTER II

# LITERATURE REVIEW

Complexity or complex system is a popular term developed in the last 20 years to explain many phenomena in physics, biology, sociology, economy, ecology, even neurology, and many other field of science. Theory of complexity “can explain any kind of complex system – multinational corporations, or mass extinctions, or ecosystems such as rainforests, or human consciousness. All are built on the same few rules.” (Lewin, 1992 as cited in Manson, 2001, p. 405).

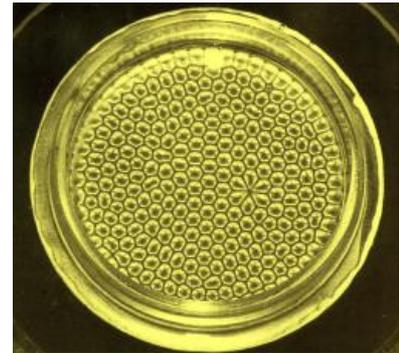
There is no agreed definition about complexity. Every science has its own definition, and even every researchers, theorists, authors on complexity have their own definition depend on the context of their researches. However, there are some characteristics of complex system which are commonly agreed. First important characteristic to be noted here, is that a complex system consists of many elements, and relation between the elements is characterized by non-linear interaction; their effects are not proportional to their causes, which make the system evolves in unpredictable and uncontrollable behavior (Heylighen, 2008). Second, in a complex system, ‘interaction between elements’ and ‘interaction between elements and their environment’, may produce a new global structure which cannot be reduced to the mere properties of their parts. This emergent property is the result of process called **Self-Organization**, where “the system spontaneously organizes itself so as to better cope with various internal and external perturbations and conflicts.” (Heylighen, 2008, p. 2). Self-organization can also be understood as “the phenomena by which a system self-organizes its internal structure independent of external causes.” (Portugali, 2000, p. 49). It is the central topic of this thesis, - self-organization - one fundamental property of complex system which has been used widely as to encounter issues manifest in the complex system, including in urban area.

The concept of self-organization had been introduced as early as 1947 by the works of W. Ross Ashby in cybernetics (Heylighen, 2008). Yet, this phenomena of self-organization started to gain its popularity by the works of Belgian thermodynamicist, Ilya Prigogine (1977) with his theory widely known as dissipative structures, and followed by research of German physicist, Hermann Haken (1983) with his theory of synergetics. In biology, self-organization is also discussed under the notion autopoiesis,

which was introduced by Humberto Maturana and Fransisco Varela in 1973. Those three theories of self-organization emphasize different things in their notion, which all are needed in explaining case studies of self-organization in this thesis. Therefore, discussion on theory of self-organization in this chapter is enriched with discussion on those three theories.

## II.1 SELF-ORGANIZATION

Phenomena of self-organization is more easily understood by observing some physical experiment, such as Benard's experiment on heated water, which is the most discussed phenomena in relation with self-organization (see also in Haken, 1981; Prigogine and Stenger, 1984; Portugali, 2000). Based on Benard's experiment, heated water in a vessel, as temperature increase, shows irregular chaotic motion of liquid which after quite sometimes starts to form regular hexagonal pattern just like honeycomb cells. The pattern emerges because of temperature differences between water molecules in the bottom of the vessel and in the upper side of the liquid.



**Figure II. 1. Hexagonal patterns produced in Benard's experiment**  
(source: <http://metahistory.org>)



**Figure II. 2. Fish schools**  
(source: <http://globalpolicyinbrief.blogspot.com>)

Other phenomena of self-organization can also be seen in our natural environment, for example in succession of ecological system (Angelis, et al., 1981), in flock of birds, in school of fishes (Camazine, et al., 2003; Parrish & Viscido, 2005), in trail-formation and wall-building by ant colony (Bonabeau, 1997; Camazine, et al., 2003), etc.

In city, self-organization can be observed in short term as in daily activities, and also in long term as the city grows and evolves. In daily activities, self-organization exists when a group of people trying to across the street without traffic light, or when they self-organized themselves to go to an event in the city center. In longer term, self-organization could be observed, for example in the case of balcony enclosures in Tel Aviv (Alfasi & Portugali, 2007; Casakin & Portugali, n.d.) or in the emergence of spontaneous settlement in most of developing countries (Barros & Sobreira, 2002).

Nevertheless, phenomena of self-organization in physic or chemistry are not as complex as in social system, because physical or chemical systems are usually composed of so many elements but identical

in form and/or size, for example atoms or molecules. Due to its identical elements, solution fit to one element will exactly fit the other elements as well. Therefore, the global structure that emerges from the process is typically uniform or regular (Heylighen, 2008) such as the case of Benard's experiment. But, this is not the case of social system. Social system, as Portugali (2000) observed it, is typically dual complex system, where the system consists of many human agents which are themselves complex systems, with different interests, beliefs, values, and perspectives. Self-organization in social system requires more exploration in order to find the best fit solution to the unique characters, conditions and circumstances of each agent. The solution which fit one agent does not necessarily fit other agents or needs adjustment to fit other agents. Therefore, in social system, the resulting structure is much more complex and unpredictable (Heylighen, 2008).

However, from physic, chemistry, ecosystem, and social system, we could see that the process of self-organization is a reactive action of a system due to changing environment, in order to reach another level of stable state. Self-organization may happen if perturbation to a system is amplified by its elements and their interactions, creating large effects to the structure and function of the system. This is called positive feedback, which "is an important source of growth and change in systems." (Cleveland, 1994). If the perturbation is not able to create amplification in the system, and the effects are smaller than the causes, then the system will show negative feedback, where perturbation is dampened and the system successfully maintain or return to its current structure. "Negative feedback is an important source of stability in complex system." (Cleveland, 1994, p. 11). Combination of positive feedback and negative feedback in a complex system makes it dynamic in its way and at the same time unpredictable and uncontrollable. It is unpredictable, because its feature of positive feedback makes the system very sensitive to small changes, as in phenomena of butterfly effects (Heylighen, 2008). It is also uncontrollable, because its feature of negative feedback makes the system stable and tends to return to its 'preferred' state.

In relation with feedback, we could conclude that self-organization is the result of positive feedback, in the sense that local interactions - which can be seen as small changes in the system - may produce global structure. This understanding is in line with some definitions of self-organization, for example in Heylighen (2008, p. 6) where self-organization was defined as "spontaneous emergence of global structure out of local interactions", or in Cleveland (1994) as "spontaneous emergence of new form of order.". Furthermore, Heylighen explained that 'spontaneous' means no internal or external agents controlling the process of self-organization. In the case of Benard experiment or other cases of self-organization, "the external forces do not determine or cause its behavior, but instead trigger an

internal and independent process by which the system spontaneously self-organizes itself.” (Portugali, 2000, p. 50).

In addition, self-organization happens under the rule of preferences, “the outcome of interactions is not arbitrary, but exhibits a ‘preference’ for certain situations over others.” (Heylighen, 2008, p. 7). For example, in an ecosystem, preferences of animals are to get food as much as possible and to avoid predators. In an economic competition, preference of companies is to get the most profit. Moreover, in social system, preferences are getting more complex, because they are driven by many factors; goals, norms, values, interests, perceptions, etc., which are different for each agent. In relation with this preferences, self-organizing system tends to produce structure which “function is to minimize friction between the agents, and thus maximize their collective ‘fitness’, ‘preferences’, or ‘utility’.” (Heylighen, 2008, p. 9).

### **II.1.1. Dissipative Structure**

One understanding of self-organization is in terms of dissipative structures, which was introduced by Ilya Prigogine in 1977. The notion ‘dissipative structure’ basically refers to the result of self-organizing process in the system, not the process itself. Therefore, the process hereafter is called dissipative self-organization (Meerkerk, et al., 2012).

To understand the notion ‘dissipative structure’, we have to realize that Prigogine used this notion as to explain phenomena in thermodynamics. He observed a system such as Benard cells, which is “continuously generating entropy, but this entropy is actively *dissipated*, or exported out of the system. Thus, it manages to increase its own organization at the expense of the order in the environment.” (Heylighen, 2001, p. 254). The notion ‘dissipative structures’ itself was used by Prigogine to “emphasize the close association, at first paradoxical, in such situations between structure and order on the one side, and dissipation or waste on the other.” (Prigogine & Stengers, 1984, p. 143). “The term ‘dissipative’ refers to the fact that these systems consume energy and ‘dissipate’ it into the environment (thereby creating entropy).” (Cleveland, 1994, p. 3).

In his observation to find this phenomenon of dissipative structures, he focused on an open system, which exchange energy and matter with its environment, as the opposite of closed systems which at that time still attracted many researchers of natural phenomena, as well as the Law of Thermodynamics. Furthermore, he also pointed at the importance of far-from-equilibrium condition as a source of order, as what he called ‘order through fluctuation’. Borrowing example from the foreword of his book (Order Out of Chaos, 1984, foreword by Alfin Toffler), there are three states of a system in relation with this nature of equilibrium, i.e.: equilibrium, near equilibrium, and far-from-

equilibrium. We can see the difference between those three states by seeing from example of population growth. In an equilibrium state, birth rate and death rate are equal, therefore the population remains stable. A few additional births without an equivalent number of deaths, might move the system to a near equilibrium stage. And moreover, booming population, for example because of immigration from other places in very large number, will make the system pushed into far-from-equilibrium state which will make the system acts and fluctuates without a recognizable pattern, and seems to be 'chaotic'.

In a continually fluctuating open system, an external influence/disturbance can be responded by the system as negative or positive feedback. In negative feedback, the system is stable enough to maintain its structure, therefore external disturbances lose and the system persists. In positive feedback, the disturbance is strong enough to influence the elements of the system to change. But, "at this revolutionary moment or a bifurcation point, it is inherently impossible to determine in advance which direction change will take: whether the system will disintegrate into 'chaos' or leap to a new, more differentiated, higher level of 'order' or organization, which they call a 'dissipative structure'". (Toffler in Prigogine and Stenger, 1984, p. xv).

From several characters above, we can conclude that the main principles of self-organizing system in theory of dissipative structure, which are able to produce order or structure as the final state, are:

- 1) Its openness to the environment, which allows continuous flow of energy and matters to get into and out of the system;
- 2) Its far-from-equilibrium state, which make the system dynamic/fluctuative, and at the same time sensitive to any small perturbation. "In these far-from equilibrium situations, systems are much more sensitive to external influences and their behavioral patterns are non-linear; small changes in the components of a system may lead to large-scale changes." (Morçöl, 2005 as cited in van Meerkerk, Boonstra and Edelenbos, 2012, p. 3).

### **II.1.2. Synergetics**

Haken's experiment on laser light also showed phenomena of self-organization. Given continuously pumped electric current, atoms in a gas discharge lamp move irregularly without any pattern. Then the electric current is increased, and suddenly the atoms start to oscillate coherently in self-organized way, and finally emit certain light wave, known as laser light. Haken explained this phenomenon by his *slaving principle*.

*"In this way, a competition between different light waves starts and eventually only one specific kind of waves survives. This wave steadily uses up the energy which we feed into the*

*laser. Whereas in a lamp all kinds of oscillations die out again and again, in the laser the most successful, that means the most long-living light wave, survives and now dominates the laser process. In technical terms that specific light has become the order parameter which slaves the behavior of all electron of the atoms.” (Haken, 1981, p. 11).*

Furthermore, he explained that the most important character of laser system which make self-organization successfully take place, is the openness of the system to external condition (in this case, electric current) and interaction between the elements of the system. “In an open system, competition sets in between different kinds of collective modes and those modes which win the competition slave the whole system and thus determine the macroscopic order” (Haken, 1981, p. 12).

The notion ‘synergetics’ itself is what he called for the discipline he investigated which refers to the “joint action of many subsystems (mostly of the same or a few different kinds) so as to produce structure and functioning on a macroscopic scale.” (Haken, 1978, p. viii). From the notion itself, we could see the emphasis of this theory in interaction and interrelation between elements of the system and the synergy it produced. The interaction and interrelation exhibits synergy if “the outcome is positive for all parties, all involved agents ‘prefer’ the outcome to the situation without the interaction.” (Heylighen, 2008, p. 7).

In interaction and interrelation between elements, there is an order described and prescribed in the process of self-organization which dominate and become the parameter for all the elements in the system. This is what Haken called ‘order parameter’, which ‘enslave’ the other elements of the system to act the same. This process of enslavement, is not exactly a one direction action, because the ‘enslaved’ also gives feedback in form of support or rejection to the order parameter. Therefore, in the case of laser light, a certain light wave gains support and the others are dampened (rejected by the ‘enslaved’). This interaction between order parameter and the ‘enslaved’ is what he called as ‘circular causality’.

Another important notion in this theory of synergetics is ‘control parameter’, which in the case of laser light, is the power input to the laser system. Control parameter is the external influence on the system which potentially makes the system oscillate and self-organize itself so as to make new emergence structure at macroscopic level.

From Haken’s theory of synergetics, we could extract some important characteristic of self-organizing system, i.e.:

- 1) Self-organization is the result of interaction and interrelation between elements of the system;

- 2) The interaction and interrelation between those elements are 'ruled' by order parameter, which tends to be the one who minimize conflict and maximize the outcome (synergy);
- 3) To be able to self-organize, the system has to be open to its environment, which potentially becomes control parameter for the system.

### **II.1.3. Autopoiesis**

Quite different with dissipative structure and synergetics, autopoiesis refers to self-organization process which emphasizes on self-preservation and renewal. Therefore, autopoietic system refers to "...any system that renews itself and regulates the renewal process in such a way that its overall structure is preserved." (Cleveland, 1994, p. 3).

The concept of autopoiesis was first introduced in biological science in 1973 by Humberto Maturana and Francisco Varela (Varela, 1981), to describe a system that recursively reproduces its elements through the use of its own elements. This is the central understanding of autopoiesis, that the interaction between different elements of the system may produce or re-produce other elements needed in the system, without any external influence. In other words, the system is operatively closed. But however, this does not mean that autopoietic system is a closed system. 'Operative closure' implies only "a closure on the level of operations of the system in that no operations can enter nor leave the system." (Seidl, 2004, p. 3). Autopoietic system is still an open system which exchange matter, energy and information with its environment, just like cells in our body which continuously exchange energy and matters to be able to 'live'. However, when, what and how the system has to contact with the environment is defined by the system itself.

Autopoiesis has also been useful in social system as discussed specifically by Niklas Luhmann in 1986. He divided social system into society, interaction and organization. First, in relation with autopoiesis, interactions are understood as "systems which reproduce themselves on the basis of communication." (Seidl, 2004, p. 14). Here, important in communication are physical and perceived presence of their participants. In other words, participants can be physically present but not always perceived as present. This implies the quality of communication in interaction. Second, Luhmann conceptualize "organizations as social systems which reproduce themselves on the basis of decisions." (Seidl, 2004, p. 15). He also explained that decision always connect with previous decision which give rise to ensuing decisions. This communication between decisions can be understood as learning process in decision-making. Finally, in relation with society, which encompasses all type of communications, it can be said that "all interactional and organizational communications always also reproduce society." (Seidl, 2004, p. 13).

More specific, autopoiesis has also been translated to be used in planning. Autopoietic self-organization is defined as “the inwards orientation of social systems that is about self-maintenance, identity forming and stabilization, and reproduction.” (Jantsch, 1980; Luhmann, 1995, as cited in van Meerkerk, Boonstra, and Edelenbos, 2012, p. 5).

From those usage and interpretation of the notion autopoiesis in biology and social science, we could conclude several characteristic of autopoietic system, which will be useful for this research, i.e.:

- 1) It emphasizes on reproduction of the components and elements of the system, in order to maintain and stabilize its structure;
- 2) The reproduction process is done by the elements of the system as part of their activities;
- 3) In society, it is important to note specifically that autopoiesis relates with reproduction of communication and decision as learning process.

#### **II.1.4. Principle and Different Emphasis on Theories of Self-organization**

There are several main characteristics of self-organization that are shown in several theories explained above, i.e.:

- 1) Self-organization happens in open and complex system (Haken, 1978; Prigogine & Stengers, 1984; Portugali, 2000). Open in the sense that it continuously changing energy, matter and/or information with its environment and complex in the sense that the system consists of many elements which interact and are interconnected with each other.
- 2) Self-organization is a spontaneous action, means that no internal or external agent is in control (Portugali, 2000; Heylighen, 2008). “All part of the system contributes evenly to the resulting arrangement.” (Heylighen, 2001). This character can be differentiated with centralized system where order/organization is created by function of leader (as in country or company), blueprint (as in house building), recipe (as in cooking) and templates (as in cookie cutters or candle molds) (Camazine, et al., 2003).
- 3) Global structure emerges from local interaction and interrelation between elements of the system (Haken, 1978; Cleveland, 1994; Heylighen, 2001). The resulting structure can be static as in the case of magnetization, or dynamic as in the case of Benard cells (Heylighen, 2001). But, similarly, the emerging global structure has different property with its elements.
- 4) Self-organization can happen if perturbations to the system are responded as positive feedback (Toffler in Prigogine and Stenger, 1984; Cleveland, 1994; Heylighen, 2003, 2008)

Those principles of self-organization are extracted from three different theories of self-organization, which will be used in explaining and understanding case studies. Therefore, it is important to show briefly the different emphasis of each theory, as shown in the table below.

**Table II. 1. Different emphasis on theories of self-organization**

NO	THEORY	EMPHASIS
1	Dissipative self-organization	<ul style="list-style-type: none"> <li>▪ External (outside of neighborhood) orientation</li> <li>▪ Exchange information between the neighborhood and its external environment</li> </ul>
2	Synergetics self-organization	<ul style="list-style-type: none"> <li>▪ Internal (inside the neighborhood) orientation</li> <li>▪ Interaction and interrelation between community member</li> <li>▪ Rules which become order parameter</li> </ul>
3	Autopoietic self-organization	<ul style="list-style-type: none"> <li>▪ Internal (inside the neighborhood) orientation</li> <li>▪ Self-regeneration and self-maintenance</li> <li>▪ Learning process</li> <li>▪ Stabilization of structure</li> </ul>

## II.2 SELF ORGANIZATION IN PLANNING

Self-organization and its metaphor have also been used widely in social science. A definition from organizational science can be used as to understand this notion in social system, i.e. “a process in which the components of a system in effect spontaneously communicate with each other and abruptly cooperate in coordinated and concerted common behavior.” (Stacey, 1997, as cited in Zuidema and De Roo, 2004, p.6). The study of self-organization in social science has the same basic principle with other science, except in the character of the elements of the system - human - which is also categorized as a complex system. This makes the process of self-organization in social system harder to be recognized and explained.

However, this character of self-organization in social system tends to be useful, moreover in planning. Therefore, several theorists have tried to optimize the use of self-organization in planning, by proposing relatively new approach in planning, emphasizing differently in content, process and procedural.

Juval Portugali, is one of influential theorists which dedicate most of his research in developing this theory of self-organization in urban design and planning. His approach in self-organized design and planning focused mostly in the content of planning, in terms of planning rules/urban code (Alfasi &

Portugali, 2007), and in procedural of planning, in terms of separation of planning institution into three function, namely planning executive, planning legislative and planning judiciary (Portugali, 2000; Portugali, 2012). In order to complete this literature review, we also have to discuss perspective of self-organization in planning which emphasized on planning process, such as in the works of Boonstra and Boelens (2011), and Zuidema and De Roo (2004).

### **II.2.1. Just-in-Case Planning vs Just-in-Time Planning**

In his recent publication (2012), Portugali argued that self-organization can be encouraged in planning, by the use of what he calls a planning court. No master plan is provided in planning, except a set of regulatory planning principle which manages relation between physical elements of urban area. This planning court is a negotiation place when a new development is about to take place. He called this approach 'just-in-time' planning, as the opposite to 'just-in-case' planning.

Just-in-case planning is called so because it is based on long term planning of supplies where inventory plays the active role in the process. This is type of planning dominates current provision of human need, as in housing, infrastructure, etc. This is what most of us know as push management/Fordist approach to planning and management. "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)

In contrary, just-in-time planning is based on demand which forces the production process to roll, for example in a factory: each units pull products from other units in the factory and from external suppliers, and so on. Here, communication and interaction becomes important. Therefore, "the role of management has changed, from determining all operation activities to setting the rules for interaction." (Alfasi & Portugali, 2004, p. 31). In case of urban planning, Alfasi and Portugali stated that "instead of using statutory long term land-use plans, just-in-time planning system should use laws or rules referring to qualitative relations between different activities and factors in the built environment." (p. 32). Nevertheless, by applying this type of planning, there will be no certain image of city can be produced in certain time frame, because the shape of the city is continue evolving based on the needs of its inhabitants.

### **II.2.2. Bottom-up Initiative as Self-organization in Planning**

Self-organization in planning is associated with learning process and innovation through dynamic interaction between stakeholders (Zuidema & Roo, 2004). This also implies the use of communicative approach in planning as to encourage the learning process. Idea of Healey's (1997) collaborative

planning and Innes' (1996) consensus planning are two approaches among the rise of communicative turn in planning.

Furthermore, as criticism to the practice of participation in planning, which remains controlled by government, Boonstra and Boelens (2011) introduced the notion self-organization 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). They argued that self-organization as community-based activity is not to be confused with collaborative participation. There is fundamental difference between those two notions. Participation refers to involvement of community in planning process which is initiated by government, whose objectives and procedure to do the participation are set beforehand, in a regime. While in self-organization, the initiatives and processes are taken by members of society, sometimes in collaboration with NGO or business, independent of government policies and detached from participatory planning procedures.

In a ladder of citizen participation by Arnstein (1969), self-organization can be placed as the highest degree of citizen power, where citizens obtain the majority of decision-making or full managerial power. This idea of self-organization is similar with Lindblom's idea of self-guided society, in which mutual adjustment between various groups of like-minded people exerts multilateral influence on government officials (Boonstra & Boelens, 2011, p. 113).

As consequences to planning, Boonstra and Boelens (2011) proposed that planning should not anymore be approached as **inside-out** (operating from government-focused perspective and out to the society), but turns it into

**outside-in**, where planners open their view to socio-spatial initiatives on the 'outside' and become part of the self-organizing process. Planning would then not be a "pre-given guide or conditional systems for self-organization, but should be the outcome of self-organizing principles." (Boonstra & Boelens, 2011, p. 118).

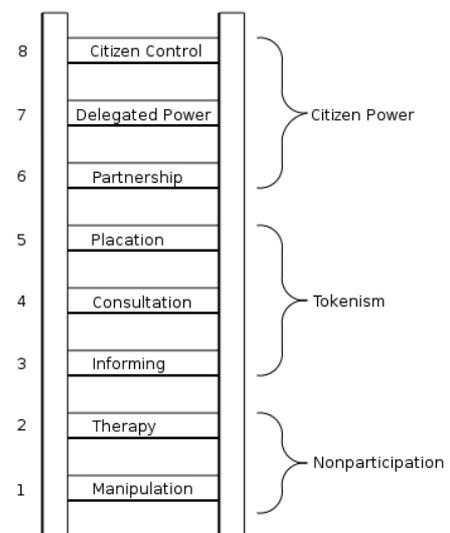


Figure II. 3. Ladder of citizen participation (source: Arnstein, 1969)

### II.3 CONCEPTUAL MODEL

In understanding this research, conceptual model is needed to illustrate what are done in this research while also shows in what aspect this research focusing on. The conceptual model is shown in figure below.

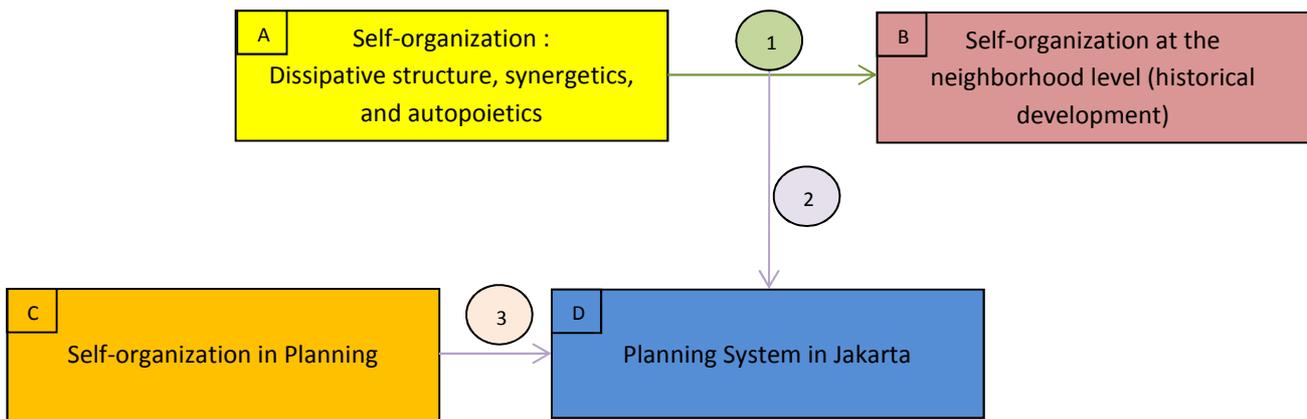


Figure II. 4. Conceptual Model

The conceptual model consists of 4 (four) boxes and 2 (two) relations, which can be explained as follow.

*Box A* symbolizes theoretical concept of self-organization used in this research to explain and understand the self-organization process at the neighborhood level, i.e. dissipative structure, synergetics and autopoietics which has been explained above.

*Box B* symbolizes practices of self-organization at the neighborhood level, in forms of case studies, which are historically analyzed in order to get clear and detail explanation and description of the processes.

*Box C* symbolizes theoretical concept of self-organization in planning which includes several theories derived from theory of self-organization in other science or from empirical practice of self-organization.

*Box D* symbolizes planning system in Jakarta, especially in relation with development at the neighborhood level.

Those 4 (four) boxes are linked to each other by 3 (three) relations, as follow:

*Relation 1* links theoretical concept of self-organization (Box A) with practice of self-organization at the neighborhood level (Box B). Three theoretical concepts, i.e. dissipative structure, synergetics and autopoietics are used to explain and understand self-organization process in the case studies, which previously has been historically divided into 4 (four) phases: pre-

development, development, stabilization, and declination. The use of each theory of self-organization has been clarified in sub chapter I.4. (Theoretical Framework) and will be explained further in Chapter III. From this relation, internal and external conditions are formulated which are important findings in this research.

*Relation 2* links Relation 1 with planning system in Jakarta (Box D). The result of theoretical analysis in Relation 1 give input to planning system in Jakarta, especially in terms of role of local authority in seeing and dealing with phenomena of self-organization at the neighborhood level.

*Relation 3* links theoretical concept of self-organization in planning (Box C) with planning system in Jakarta (Box D). Theoretical concept of self-organization in planning gives input to planning system in Jakarta, in terms of planning perspective and position of planner in self-organized community.

From those 3 (three) relations, the main focus of this research is in Relation 1 which resulting in an explanatory (internal and external) conditions of the self-organization process. Result of this analysis (from practical cases), together with theoretical concept of self-organization give input to planning system in Jakarta especially in the role of local authority and planners, as shown in Relation 2 and 3.

- - -

In next chapter, each case study will be historically and theoretically analyzed in order to understand the process of self-organization. The historical analysis is to explain the phases of self-organization, which in this thesis is divided into 4 (four) phases: pre-development of initiative, development of initiative, stabilization and decline. The analysis is deepened with theoretical analysis, to understand the case studies based on three different theories of self-organization. As the result, those two analyses will reveal the strengths, weaknesses and issues of self-organization process in each case study, which will be useful for answering the research questions.

\* \* \*

## CHAPTER III

# CASE STUDY AND ANALYSIS

This chapter includes description and analysis on 3 (three) chosen case studies (RW 08 Banjarsari, RW 03 Rawajati, and RW 09 Pondok Kelapa) based on interviews, field observation and analysis of written documents such as reports and published articles in the website. But to make understanding of the case studies easier, this chapter starts with explanation on government and planning system in Indonesia, particularly in Jakarta and its relevance with the process of self-organization at the neighborhood level as discussed in case studies.

### III.1. GOVERNMENT AND PLANNING SYSTEM IN JAKARTA

Jakarta – the capital city of Indonesia – administratively is a province in Indonesia, with an area of 661,52 km<sup>2</sup> ([www.jakarta.go.id](http://www.jakarta.go.id), 2009). As a capital city, it owns special function as the center of government and economic activities.

The province is divided into 5 (five) municipalities (*kotamadya*), i.e. North Jakarta, Central Jakarta, East Jakarta, West Jakarta and South Jakarta, which lie on the main island (Java Island), and 1 (one) regency, i.e. Kepulauan Seribu (A Thousand Island Regency), which lies at the north side of the main island ([www.jakarta.go.id](http://www.jakarta.go.id), 2009). Unlike any other province in Indonesia, Jakarta is dominated with urban area. The whole area of 5 (five) municipalities in the main island are considered as one big city in the sense that all parts of the administrative area were designated as urban area.

In running its governmental task and responsibilities, each municipality is divided into several districts (*kecamatan*) and each district is divided into several *kelurahan* which is the lowest level in government structure. In addition, as to support governmental task and function, below *kelurahan* level there are social organizations formed by community, known as *Rukun Warga* (hereafter : RW), which in this thesis is defined as neighborhood level. *Rukun Warga* consists of several *Rukun Tetangga* (hereafter : RT) and thus called sub-neighborhood. The organizational structure of government in DKI Jakarta can be seen in the scheme below.

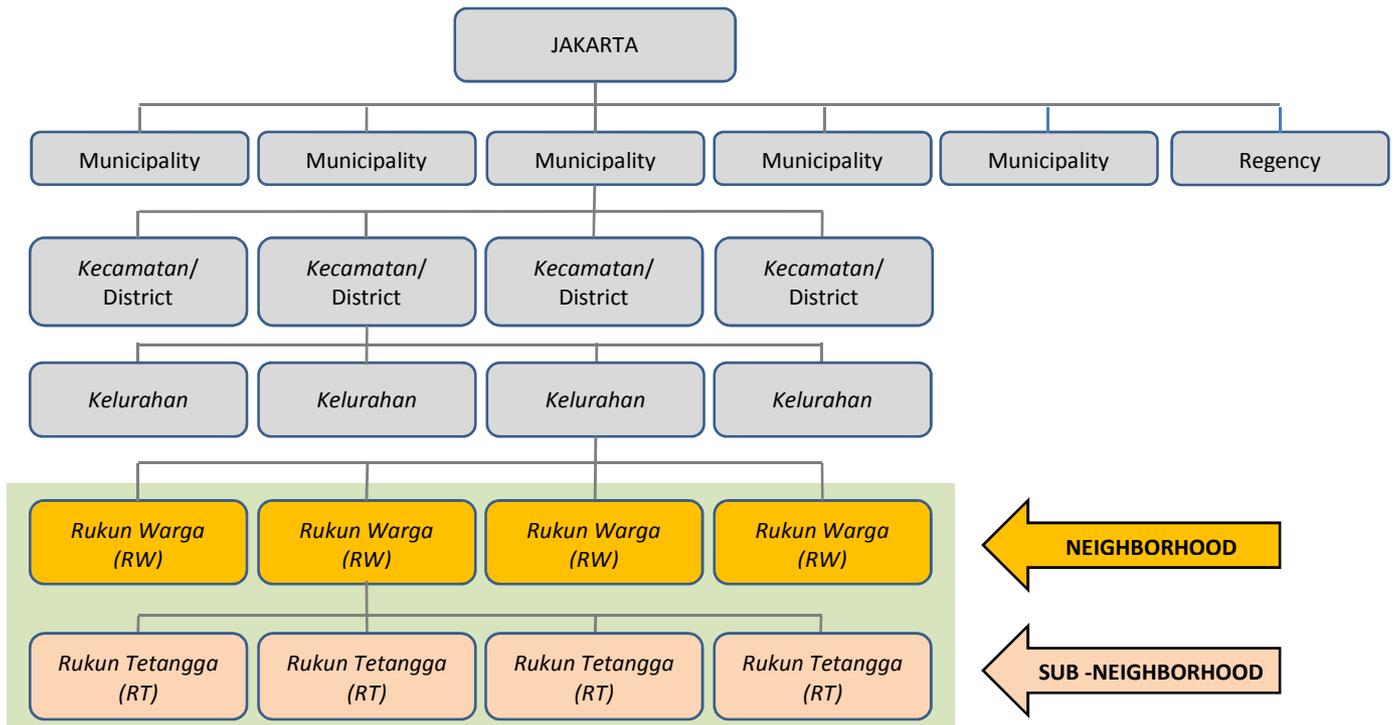


Figure III. 1. Government structure of Jakarta

According to The Decree of Minister of Internal Affairs No. 5 Year 2007 concerning Guideline for Social Organizations, caretakers of RW (supported by caretakers of RT) have responsibility to help the tasks of *Lurah* (head of *kelurahan*) in implementation of government affairs (article 14). In performing the task, RW has some functions (article 15), as to:

- a. collect demographic data and other administrative services;
- b. maintain order, security, and harmony between people in the neighborhood community;
- c. create ideas for development by developing aspiration and self-help communities; and
- d. drive mutual aid and community participation in the neighborhood.

At the neighborhood level (RW) and sub-neighborhood level (RT), there is also a social organization called PKK (originally TP PKK : *Tim Penggerak Pemberdayaan dan Kesejahteraan Keluarga* / Team for Empowerment and Family Welfare), which activities are mostly dedicated for community development. This organization mostly involves and is managed by women due to its activities which are feminine in nature. Its tasks are also to help *kelurahan* and become its partner in empowerment and improvement of family welfare, in forms of, e.g. :

- 1) explore, motivate and develop potencies in the community especially family, in order to improve their welfare; and
- 2) organize counseling and guidance for families in the neighborhood, in relation with family welfare.

In the regulation, there is no statement about the functional relationship between RW (includes RT) and PKK, but in reality, those social organizations work together and support each other in performing their tasks and functions. This can be shown in 3 (three) case studies which discussed in this thesis.

In relation with planning, RW (together with RT and PKK) may propose a development plan for their neighborhood. This proposals are then discussed in higher level of government in a forum called Musrenbang (*Musyawaharah Perencanaan Pembangunan / Discussion Forum on Development Planning*), which is organized once in a year (regulated in Government Decree No. 8 Year 2008 concerning Procedure and Mechanism in Arrangement, Monitoring and Evaluation on the Implementation of Local Development Planning). The forum is intended to collect aspirations from neighborhood level, in order to formulate development planning in higher level of government structure. But, due to limitation on government's fund, those proposals are chosen based on priority, and thus not every neighborhood get financial aid from government for the development. However, the neighborhoods may get other sources of fund, e.g. from the community members, and from other parties, such as private company, NGO, etc.

From the explanation above, we could see that the government (represented by *kelurahan* level) still has responsibility for the developments happen at the neighborhood level. But, instead of directly plan and conduct the development, government may empower community to do planning and development by themselves. In other words, the community is encouraged and given chance to do self-organization in order to improve their living neighborhood. This space for self-organization in the neighborhood may bring 3 (three) different outcomes; improvement, static, or degradation. Improvement can be achieved if the neighborhood is able to self-organize themselves in a positive way, as shown in the case studies. But, opposite result will occur if the neighborhood fails to self-organize themselves and thus made the neighborhood degrade. Many neighborhoods in Jakarta indeed show static condition and degradation, which mostly manifests in forms of slums. Therefore it is important to learn from best practices in the city, understand its journey and its conditions (internal and external) which may lead to successful self-organization.

### **III.2. CASE STUDIES**

There are 3 (three) case studies discussed in this thesis, RW 08 Banjarsari, RW 03 Rawajati, and RW 09 Pondok Kelapa. Those three case studies were chosen as the best practices of self-organized neighborhood in Jakarta which contribute to the improvement of urban fabric and environment. The first and second case studies (RW 03 Banjarsari and RW 03 Rawajati) show the same aspect of improvement, in terms of green neighborhood and integrated waste management. But those two case

studies involve different actors in the process which make them very much different in terms of historical development and issues faced by each case study. The third case study (RW 09 Pondok Kelapa) shows different forms of improvement, i.e. in forms of provision of public facilities, and thus shows also different historical development and issues.

In analyzing those case studies, two perspectives are used; historical and theoretical. Historical analysis is done first to make explanation on theoretical analysis easier.

In **historical analysis**, each case study is explained under 4 (four) phases of historical development, i.e.:

- 1) **emergence/pre-development of initiative**, which includes the explanation on when, what, who and how the initiative emerged in the neighborhood.
- 2) **development (amplification) of initiative**, which explains when, who, why and how the initiative spread to the community members. The end of this phase is marked by several achievements received by the neighborhood as concrete indicator that the neighborhood has reached its 'more desired state'.
- 3) **stabilization phase**, which explains when and how the neighborhood could stabilize its 'desired state' after receiving the highest achievement in their journey.
- 4) **declination phase**, which explains when, how, and why the neighborhood could experience the declination in its journey after successfully maintain its 'desired state' in stabilization phase.

The division of historical development into phases is to assure the three case studies are comparable to each other, and thus make the further analysis on internal and external condition which support/constraint the process of self-organization can be easily done.

**Theoretical analysis** is the analysis of case studies based on 3 (three) different theories of self-organization which have different emphasis, i.e. 1) dissipative structure, 2) synergetics, and 3) autopoietic, reviewed in Chapter II. The theoretical analysis is done to get more understanding on the process of self-organization in each case study, to compare the theories and practices in order to get something that can be learned from theory into practice and/or vice versa.

Those two analyses are applied in each of the case studies and then compared, so as to get general conclusions and answers of the research questions.

### III.2.1. Case Study I – RW 08 Banjarsari

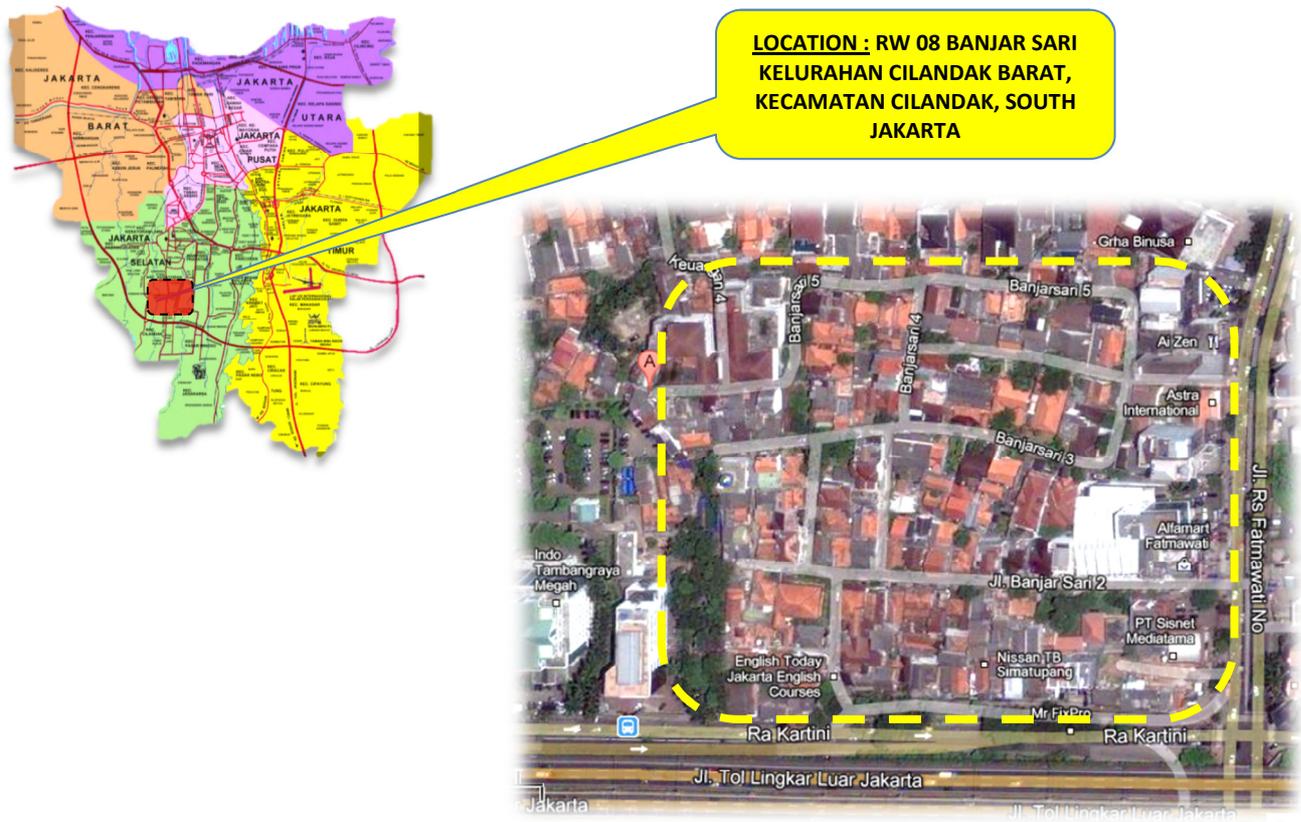
RW 08 Banjarsari is known as the pioneer of green neighborhood in Indonesia. The neighborhood had won several achievements which make it well known, not only in Jakarta, but also Indonesia and some

other countries. In 2000, Department of Agriculture and Forestry appointed Banjarsari as the best neighborhood in Indonesia in terms of greening and conservation of nature ([www.indopos.co.id](http://www.indopos.co.id), 2012). In the same year, it was also appointed as environmental friendly village (kampong) by UNESCO ([www.liputan6.com](http://www.liputan6.com), 2006). In addition, one of the initiator in the neighborhood (Harini Bambang Wahono) received Kalpataru environmental award in 2001 ([www.tempo.co](http://www.tempo.co), 2002; [www.liputan6.com](http://www.liputan6.com), 2006), and the neighborhood itself was appointed as one of tourism destination in South Jakarta in 2002, by Department of Tourism ([www.tempo.co](http://www.tempo.co), 2002).

However, those awards and predicates were not easy achievements. The community had to spend several years of initiative development, with support from UNESCO and NGO Yayasan Kirai Indonesia. In this thesis, the process can be acknowledged as the process of self-organization, considering the definition from Boonstra and Boelens (2011) which defined self-organization 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).

#### **III.2.2.1. General Information**

RW 08 Banjarsari is located in *Kelurahan Cilandak Barat, Kecamatan Cilandak*, South Jakarta. The neighborhood occupies 3,4 ha of land and consists of 8 (eight) sub-neighborhoods (RTs) with 606 families / 2071 inhabitants (Annual Report of RW 08 Banjarsari, 2012). Socio-cultural condition of inhabitants in the neighborhood is vary, but most of them come from outside Jakarta. In terms of economy, the neighborhood could be classified as ‘low to middle class income’ neighborhood, and is dominated by retirements and workers of private companies (Sudarman, 2013).



Picture III. 1. Location of the neighborhood : RW 08 Banjarsari, Kelurahan Cilandak Barat, Kecamatan Cilandak, South Jakarta. (source: Google map and analysis)

### III.2.2.2. Historical Analysis

The initiative began in 1992 when several housewives had a commitment to improve the condition of their living neighborhood (Wahono, 2013). The first simple activity they did was planting, which was organized as *arisan*<sup>3</sup>. Instead of money, the members 'save' plants to be given to the winner of *arisan*. The activity then got support from caretakers of RW and was disseminated to the rest of the community members, became part of routine activity in the neighborhood. After few years of activity coupled with continuous personal approach, the initiative was proven to be successful to make the neighborhood greener.

In 1996-2003, UNESCO paid attention to the development of initiative in the neighborhood and decided to make the neighborhood as pilot project in Integrated Community-Based Waste Management (ICBWM). UNESCO supported the project in terms of finance, while the operationalization of the project was handled by Yayasan Kirai Indonesia (NGO) (Wiryoatmodjo, 2013). The project consisted of 4 (four) main activities in relation with waste management, known as 4R

<sup>3</sup> *Arisan* is a social gathering that takes place at fixed interval, usually at each member's home in turn. The rotating arisan holder (drawn by lots) receives payment from each other member and provides food for those members. (source: Wikipedia).

(Reduce, Reuse, Recycle and Replant). From those 4R activities, recycle and replant were the most important activities which influencing the neighborhood in terms of spatial. Recycle activities included composting (processing organic waste into compost) and creating recycle product from an-organic waste. Those activities, especially composting, needed space as composting center. As the neighborhood had no more vacant land, one of house plot in the neighborhood (personally-owned) was used as composting center.



**Picture III. 2. Composting center on one of unused plot in the neighborhood.**  
(picture by author, May 2013)



**Picture III. 3. Separated garbage bin from unused drums**  
(picture by author, May 2013)

In other forms, replant activity also influenced spatial aspect of the neighborhood, i.e. in forms of visual image. This activity also positively improved air quality in the neighborhood.



**Picture III. 4. Green scenery in front of a house in Banjarsari**  
(picture by authors, May 2003)



**Picture III. 5. Green scenery in front of a house in Banjarsari**  
(picture by authors, May 2003)

As to understand more detail about the process of self-organization in this case study, I divide the historical development of this case into 4 (four) phases, i.e.:

**1) *Emergence and pre-development of initiative***

The first initiative was in terms of planting, which came from a housewife<sup>4</sup> who had a strong environmental background and ambition to make her living neighborhood green and comfortable. The initiative got supports from other several housewives after she did some personal approaches through teaching and sharing. The initiative was then disseminated through social activity in the

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<sup>4</sup> Harini Bambang Wahono, who received the Kalpataru environmental award in 2001.

community called *arisan*, which was fully supported by caretakers of RW at that time. In this phase, some other initiatives also took place, e.g. composting, recycling an-organic products such as plastic, papers, etc. but were practiced insignificantly until 1996.

## **2) Development (amplification) of initiative**

The local initiative of the neighborhood received great attention from UNESCO, which at that time actively concerned on environmental education in developing country. In 1996, UNESCO appointed the neighborhood as pilot project of ICBWM and made the neighborhood as 'learning center' in integrated waste management. The project was proven to be effective in building social cohesion among community members and thus bring the neighborhood to the next phase of initiative development.

In this phase, with financial support from UNESCO and knowledge support from Yayasan Kirai Indonesia, some initiatives in the neighborhood were successfully spread to all of community members, through formal socialization by NGO, and informal personal approach by caretakers of PKK, RW and RT in several communal activities. In this process, the most important outcome was achieved, community awareness on clean and green environment improved and successfully maintained until now.

Besides internally, the initiative was also spread externally to other neighborhoods outside Banjarsari. In line with the main objective of UNESCO, the neighborhood became the learning center in integrated waste management, and therefore had to be able to build and maintain external relationship with other parties. In realizing this objective, openness of the neighborhood to the external environment is the most important feature because 'learn and share' (the neighborhood *learn* from NGO and other sources, and *share* to other neighborhoods) were two activities which continuously strengthened the process of self-organization in the neighborhood. In other words, continuous exchange of information between the neighborhood and its external environment became 'the fuel' for the internal process of self-organization.

After success in implementing integrated waste management, the neighborhood received several achievements in 2000, 2001 and 2002, which indicated that the neighborhood was already in its 'more desired state', and ready to stabilize the condition.

## **3) Stabilization phase**

Although the pilot project from UNESCO finished in 2003, but the neighborhood had already in its 'desired state' since year 2000 (shown by the first achievement as the best neighborhood in

Indonesia in terms of greening and conservation of nature) , and tended to stabilize the condition after the achievements. In this stabilization phase, some institutions had been created and embedded in daily life of the community members, especially in terms of clean and green neighborhood. All community members had been realized the positive effects of clean and green environment, therefore tended to maintain the condition. Other 4R activities, e.g. composting, recycling, and making herbal medicine, were also actively done by several community members who had the skills. The products were sold to visitors and added extra income to the community members.

The stabilization phase had its disruption in 2002 when some internal conflicts started to emerge and weaken the social cohesion among the community members (Wiryoatmodjo, 2013). In 2003, the UNESCO project finished and the decline was concretely actualized.

#### **4) Declination phase**

In addition to internal conflict, some inhabitants which previously held important roles in the phase of pre-development and development of initiative moved out from the neighborhood. Those conditions, made the 4R activities were not fully active anymore (Wiryoatmodjo, 2013). The composting activity (and waste-separating), recycling and making herbal medicine tremendously declined, although still in practice by few people. The planting program, which was the basic initiative developed in the community, is the only activity which still strongly embeds in the community as part of the informal institution. The neighborhood's function as 'learning center' is also still in practice though also declining in numbers of visitor, and is currently divided into two separated 'class room' (Wahono, 2013; Wiryoatmodjo, 2013).

### **III.2.2.3. Theoretical Analysis**

Theoretical analysis of this case study is divided into 3 (three) parts, as explained below.

#### **1) Dissipative Self-Organization**

This theory emphasizes on external orientation of the system, in which it exchanges energy, matter and information with its environment. In this case, dissipative self-organization happened in every phase, because the neighborhood continuously exchanged information with the external environment through its community members. But, the highest amplitude of information exchange was in the phase of initiative development (2<sup>nd</sup> phase) when the neighborhood was assigned by UNESCO as 'learning center' in integrated waste management.

In that phase, continuous flows of 'in' and 'out' information became a source of dynamic order, a fuel for the internal process of self-organization, as shown in the experiment of Benard cells. The 'in' information mostly came from Yayasan Kirai Indonesia which was trusted for technically assisting the community in ICBWM. The knowledge and information were directly received from the NGO through formal socialization, training, seminar etc., or indirectly through input from other parties.

The 'out' information was given to other parties which visited Banjarsari to learn more about ICBWM. Those parties were not only from other neighborhoods in Indonesia, but also from universities, scholars, NGOs, press, etc. which appreciated the process of local initiative development in Banjarsari. This 'out' information was given formally through seminar or training in the 'class room' which was organized by the community members, or informally through personal interview and discussion with one or several community members.

## **2) Synergetics Self-Organization**

Theory of synergetics emphasizes on interaction and interrelation between elements of the system which may produce certain structure in macro level. In interaction and interrelation between the elements, there is an order described and prescribed in the process of self-organization which dominate and become the parameter for all the elements in the system, which Haken called order parameter. In this case of RW 08 Banjarsari, the order parameter is the institution which has been set and introduced, especially through pilot project of UNESCO. Some institution can be listed, e.g.:

- a) Each household had to plant in front of their houses, any kind of plants (medicinal plants are priority), using any materials as vases.
- b) Each household had to keep sewer and road in front of their house clean.
- c) Each household had to separate organic waste from an-organic waste. The already separated waste would be picked up by the worker to the composting center.
- d) Organic waste would be processed into compost in the composting center and an-organic waste would be recycled into handicraft products by several community members.
- e) When visitor come, certain community members were actively involved in organizing the events.

In this case, however, those rules or institutions -or in theory of synergetics known as order parameter- could not be fully maintained. Only the first and second rules still exist in the neighborhood until now. *"We could see that clean and green has been part of community's life in*

*Banjarsari, until today. I think those are two 'messages' (among many others) that still can be maintained and thus received by new inhabitants and today's generation."* (Wiryoatmodjo, 2013). The other rules, are indeed still in practice by few of community members, but insignificantly influencing the whole neighborhood system.

The disappearance of some established institutions happened due to declination of the process of self-organization which in this case was mostly caused by weakened social cohesion among community members. This can be explained by theory of synergetics self-organization. In theory of synergetics, the spread of order parameter, or positive feedback can be successfully achieved due to interaction and interrelation between the elements of the system, which in the case of laser light the elements are atoms. In this case, community members as the elements of the neighborhood system were not able to maintain their interaction and interrelation, which was indicated by several missing connection and communication between the community members. The chain reaction as in laser light was disrupted and thus the process of self-organization stopped. Therefore, from theory of synergetics we can learn that maintaining good interaction and interrelation between community members are important as to maintain the process of self-organization, and at the end, to also maintain the established institution.

### **3) Autopoietic Self-Organization**

Autopoietic self-organization is about self-regeneration and self-maintenance of the system. This is also important in maintaining the institutions which have been established in the process of self-organization. In this case, the moving out of some key actors, lead the self-organization process to the declination phase. However, the decline could be prevented if the community was able to regenerate the important roles played by some of key actors, for example in recycling activity. In the phase of initiative development and stabilization, many housewives were able to make something creative like bags, vases, etc. from unused plastic glass, straws, etc. But, the regeneration process did not run well, thus when some of those housewives move from the neighborhood, the activity slowly declined. One of the interviewee admitted that *"there was a time when one of us (the community members) held an event, such as wedding or birthday, the souvenirs were made by several housewives in the neighborhood."* (Wiryoatmodjo, 2013).

In social system, regeneration can also be understood in terms of learning (see explanation in Chapter II). In this case I analyze two ways of learning, i.e. learning from other people and learning from the past. Learning from other people is what shown in this case as regeneration of activities which passed from person to person in the community members. Learning from the past

manifested e.g. in decision making process where every decision always connect with previous decision. This decision making process happened individually -which means that every individual may renew his/her perspective, preference, decision, etc. in response to his/her environment-, and collectively which involve community members in a meeting, discussion, etc.

Those all learning processes contribute to the ability of the system to self-maintain which is one key aspect to prevent the system from declination after its success in reaching its 'desired state'.

#### **III.2.2.4. Reflections on Case Study**

From the case study of Banjarsari, there are several findings which may contribute to the answer of the research questions, i.e.:

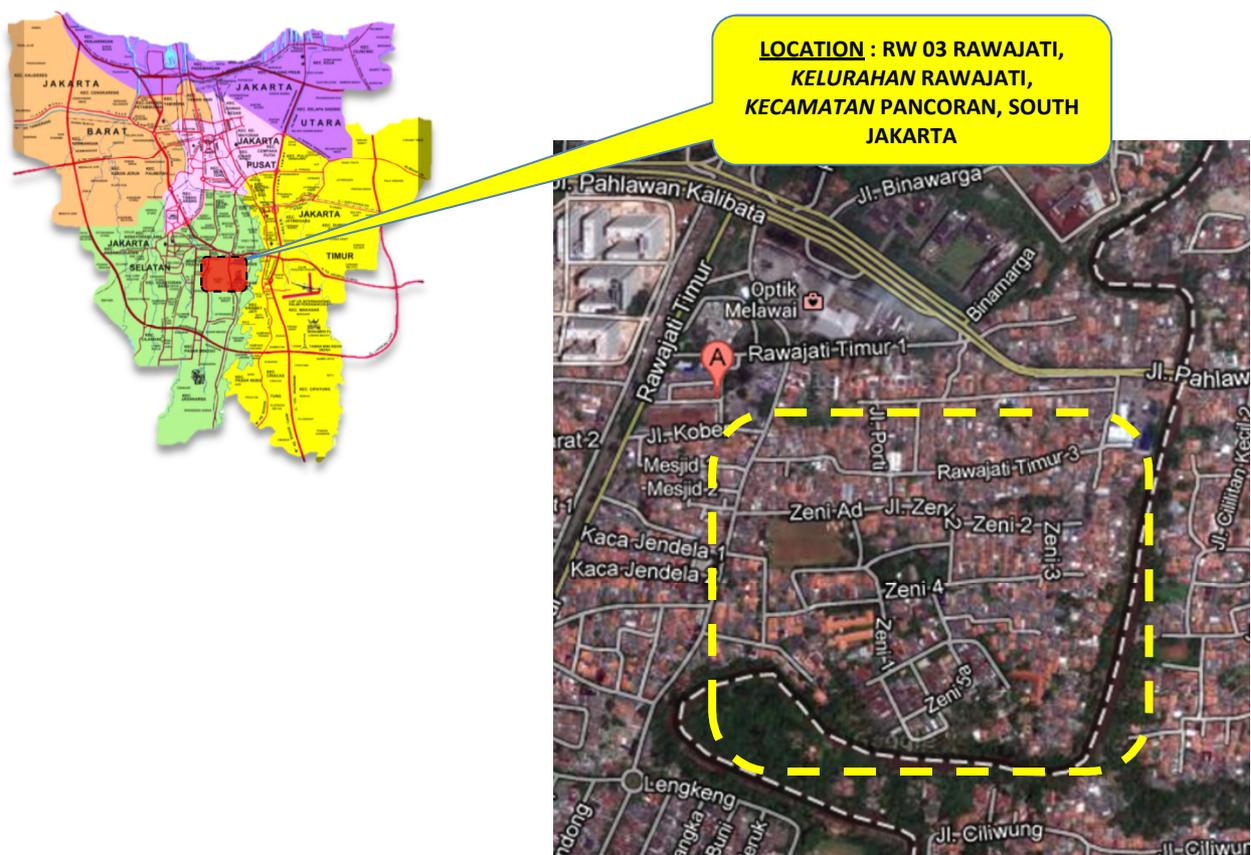
- 1) Support from external parties, in this case UNESCO and NGO, indeed can 'push' the neighborhood toward the phase of initiative development. But however, the initiative which developed fully by the neighborhood was proven to be more stable than that was pushed by external parties. This can be understood by analyzing the basic motives of the community members in doing some activities, for example recycling. Profit-oriented motives, which emerged during the project, would never last longer than the real concern on environment, which developed through heart-to-heart personal approach.
- 2) Maintaining social cohesion between the community members is important to stabilize the 'desired state' which has been reached and the institution which has been established, and moreover to make the system able to create other new initiatives which may lead to another process of self-organization.
- 3) Regeneration of activities/roles played by some of key actors is also important, to prevent the 'desired state' from declining when some of key actors are moving or inactive.

#### **III.2.2. Case Study II – RW 03 Rawajati**

RW 03 Rawajati is widely known since former Governor of DKI Jakarta, Sutiyoso, launched it as agro-tourism village (kampong) in 2005 ([www.beritajakarta.com](http://www.beritajakarta.com), 2009). The predicate was given for its green scenery of neighborhood environment and its community-based waste management. The neighborhood had also won annual competition of the best neighborhood in Indonesia, in terms of clean, green and healthy neighborhood, in the same year (Nuryanto, 2013). Previously, it was also awarded as the best neighborhood in South Jakarta (2003) and the best neighborhood in DKI Jakarta (2004) (Nuryanto, 2013).

### III.2.3.1. General Information

RW 03 Rawajati is situated in *Kelurahan Rawajati, Kecamatan Pancoran, South Jakarta*. The neighborhood occupies 12,5 ha of land and consists of 10 sub-neighborhoods (RT) with 929 families / 3180 inhabitants (Annual Report of RW 03 Rawajati, 2012). Six RTs lie in formal housing (developed by government) and 4 (four) others lie in informal housing (developed by the inhabitants) (Nuryanto, 2013). The formal housing was basically planned for the military force (army/AD-Angkatan Darat) but currently it has been a mix-community housing since some houses were sold to third parties. In terms of cultural composition, the neighborhood is also a mix of ethnicities, but mostly are Betawi (original inhabitant of Jakarta) and Javanese. In addition, economic condition of inhabitants in the neighborhood is vary, from low to middle income. Most of them are retired from the military force (AD/Angkatan Darat), only few of them are still active (+/- 7 people). Other inhabitants have various livelihoods; businessman, trader, private employee, government employee, etc.



Picture III. 6. Location of the neighborhood: RW 03 Rawajati, Kelurahan Rawajati, Kecamatan Pancoran, South Jakarta (source : Google map and analysis)

### III.2.3.2. Historical Analysis

The first initiative began in 2001, when some people who had important position in the neighborhood's organization (caretakers of RW) agreed to do something with their living environment,

as an attempt to improve their quality of life (Nuryanto, 2013). Facilitated by the head of RW, few people from the neighborhood (caretaker of RW, RTs and PKK) were brought to see several best practices of green neighborhood management in other locations, including Banjarsari who initiated the action earlier. The visit resulted in a commitment among caretakers of RW, RT and PKK to realize the green neighborhood and implement integrated waste management which then was successfully widespread to the community, through formal and informal approach. As in Banjarsari, the first initiative to be developed was planting which was simple and easy, yet able to bring tremendous result in improving environmental quality of the neighborhood.



**Picture III. 7. Green scenery in the neighborhood, the result of more than 10 years of planting.**  
(Picture by author, May 2013)

After the success of planting program, the initiative gradually continued with creating communal green space in the neighborhood, composting, recycling, and developing waste bank system, as shown in some images below.



**Picture III. 8. Left: communal green space for medicinal plants. Right : handicrafts from recycle material.**  
(picture by author, May 2013)



**Picture III. 9. Left: the composting center. Right: the waste bank.**  
(picture by author, May 2013)

To have more understanding in the process of self-organization in this case, there are 4 (four) phases of historical development which can be explained, i.e.:

### **1) *Emergence and pre-development of initiative***

The initiative emerged in 2001 from caretakers of RW. The initiative was then followed by building commitment among caretakers of RW, RT and PKK to realize the green neighborhood environment. In this phase, some visits to several locations, formal and informal neighborhood, was conducted as to absorb and exchange information with external environment. Openness of the neighborhood system became important character in this phase.

After some visits to other neighborhoods which took approximately 4 (four) months, several other meetings were conducted which resulting in an agreement on programs to be undertaken gradually to realize the green neighborhood (Supardi, 2013).

The key actors in this phase were caretakers of RW, RT and PKK, and several community members which play important roles in the neighborhood, for example who had expertise in waste management and creative recycling. In addition, this was also a time-and-knowledge intensive phase. It was necessary to maintain the commitment among actors in realizing the idea of green neighborhood. Therefore, actors were chosen who were able to contribute their time and knowledge in the process. In this case, most of actors involved were housewives and retirements (Nuryanto, 2013; Supardi, 2013).

## **2) Development (amplification) of initiative**

This phase was started by socialization of programs which had been agreed in pre-development phase. Several programs were introduced to the community in sequence, to give chance for implementation and evaluation. The first and basic program was to plant minimum of 7 (seven) vases per house. This program was not an easy attempt at first, because there were some inhabitants who showed objections in fulfilling the program, especially those from low-class income community. In dealing with this group, a special team from PKK, consists of several housewives, played an important role. They conducted some informal meetings and socialization with group of community, especially housewives, in several routine gathering activities in the neighborhood, e.g. *arisan* and *pengajian*<sup>5</sup>. Some formal socialization was also organized few times inviting whole members of the neighborhood community, although not as effective as informal and personal approach. The other approach which proven to be effective in developing the initiative was shown by competition (between RT) and reward system, which was organized annually in the neighborhood (Nuryanto, 2013).

After 8 (eight) months of socialization, the planting program in each house was success to make the environment greener (Supardi, 2013). The initiative was then developed to provide communal green space that can be enjoyed together by the neighborhood community (Nuryanto, 2013). It was funded, developed, and maintained by the community members.

After the success of planting program, there was a great need of fertilizers for the plants. At the same time, there was also a problem concerning bad air quality in the neighborhood due to waste combustion, which at that time was still in practice. In 2002, another initiative followed : each house was asked to process their organic waste into compost, which then can be used as fertilizer (Supardi, 2013). Due to communal demand of compost and ineffective household composting, the process was then centralized in a composting center. Again, the construction of the composting

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<sup>5</sup> Pengajian is activity where moslem people study Al-Quran together with the help of teacher.

center and provision of its equipment were done and funded by the community members. As to operationalize it, each household was obliged to separate their waste into organic and an-organic. The organic wastes, organized by each RT, were then brought to the composting center and processed to be compost. Some of an-organic waste like plastic cup, plastic bottle, paper, board, styrofoam and alike, were recycled to make creative stuff like bag, flower, pot, and table mat, by several housewives in the neighborhood who previously had been trained by PKK. This activity gave them extra income for the family since they could sell the recycled stuff in some exhibitions or to the visitor who came to the neighborhood.

Extra an-organic wastes were collected in the waste bank and sold to waste collector. The waste bank program which developed in the neighborhood is also an interesting one, and became the best waste bank system in Jakarta ([www.beritajakarta.com](http://www.beritajakarta.com), 2012). In this program, every community members may 'save' an-organic wastes in the waste bank like they save money. The caretaker of the bank will make note on the 'account' book and sell the waste to the collector. After sometime, the members may withdraw their money as much as the wastes collected. Main target of this program is basically school age children. By this program, they are indirectly taught to care for their environment.

In this phase, key actors for spreading the initiative were mostly caretakers of PKK. The first reason was because it was part of the organization's task and responsibility. The second reason was because the program was feminine in nature, especially the planting and creative recycling program. The third reason was because PKK has several routine activities which could be effective in delivering the message of the program. However, in this phase, government - *kelurahan* and *kecamatan* level - also played important role as to support the knowledge and expertise needed by the community, for example in composting.

As explained above, the programs were introduced in sequence. So, after the first achievement in 2003 (the best neighborhood in level of municipality/South Jakarta), several development of initiatives still took place to improve the system. The end of this phase was when the neighborhood was appointed as the best neighborhood in Indonesia (2005). At that time, all programs, i.e. planting and 3R (reduce, reuse, recycle) of integrated waste management had been developed and start to stabilize.

### **3) Stabilization Phase**

The stabilization phase indicates that the system has already in 'more desired state'. In this case, green neighborhood as the first 'dream' of the initiators had been realized. All programs had

become part of daily life in the community and practiced as routine activity. The new institution relates with the manifestation of green neighborhood had been created. The example of this was when new inhabitants come to the neighborhood, they were directly or indirectly informed to do planting in their house and to be involved in the community-based waste management e.g. in separating their household waste into organic and an-organic. The institution indeed was informal but strongly embedded in the neighborhood as the community has accepted them as their new 'rules of the game'.

After being appointed as the best neighborhood in Indonesia and agro-tourism kampong, the neighborhood became focus of attention. Many visitors from other neighborhoods, organizations and institutions came to their place and learned what they had done to realize the green neighborhood. This was also the reason for them to maintain its 'desired state'. The stabilization phase lasted for 3 (three) years from 2005 – 2008.

#### **4) Declination Phase**

Nevertheless, time goes by and visitors reduced. This affected the spirit and motivation of the community. It was year 2008 which acknowledged as the year the declination start. This has been admitted by one of the interviewee, *'In year 2008, the implementation of programs has reduced, because the spirit and motivation of the community were not well-preserved.'* (Nuryanto, 2013). However, the new institution in relation with green neighborhood had been established, and was successfully maintained until now, even though the activities are not as intense as in the stabilization phase.

### **III.2.3.3. Theoretical Analysis**

To build more understanding on this case study, 3 (three) different theoretical perspectives are used to explain the process, i.e.:

#### **1) Dissipative Self-Organization**

In this case, dissipative self-organization happened in every phase. But there were two important moments where the exchange of information was in its highest amplitude. The first moment was in the pre-development phase when the neighborhood received great 'in' information from their visit to other neighborhoods. And the second moment was in the stabilization phase when the neighborhood had to give 'out' information to visitors. In between those two moments, some exchanges of information were also happened personally in the community members through reading, training, seminar, discussion, interview, etc.

Giving the 'out' information to the visitors, in theory of 'dissipative structure' is like the entropy dissipated (exported) out of the system in Benard cells. But, in order to be able to dissipate, the Benard cells need to consume energy (in forms of heat). In this case, the energy is the knowledge and information accepted from external environment through visit, training, discussion, etc. Through continual process of consume and dissipate, the Benard system is able to self-organize and create its (dynamic) structure. This is also the case of RW 03 Rawajati; the 'in' information and knowledge they got from external environment and the 'out' information they gave back to external environment were proven to be able to create and maintain its (dynamic) structure and institutions. However, the fluctuation of 'in' and 'out' should be maintained if to preserve the (dynamic) structure. Failure in maintaining the 'in' and 'out' of information may lead to change of the structure. In this case, the reduction on number of visitors (the 'out' information) were proven to change the structure of the neighborhood system, although non-destructive, for example in recycling activity. Compared to stabilization phase where visitors came almost every day and thus made the recycling activities was tremendously active, in the declination phase the visitors came only once in a month which made the recycling activities tremendously declined.

## **2) Synergetics Self-Organization**

In this case, interaction and interrelation between community members became important, especially in the phase of initiative development when formal socialization and informal personal approach took place. The interaction was basically aimed to influence every community member to act the same, following certain rules/institution which had been agreed to be the 'order parameter' in the neighborhood. Those institutions were successfully established and embedded in daily life of the community members until now. Some of the established institutions are listed below:

- a) Each household had to plant and preserve minimum of 7 (seven) vases in front of their house;
- b) Each household had to separate organic waste from an-organic waste. Mix waste will not be picked up by the worker.
- c) Each household had to pay certain amount of money (depend on each RT) per month, for security, waste collection, etc.
- d) Each RT had to collect waste from all houses in its area and brought the organic waste to the composting center, and the an-organic waste to the waste bank.
- e) Every community member might individually 'save' an-organic waste in the waste bank and withdrawn the money after the collection.

- f) When visitor came to the neighborhood, certain community member played certain task in organizing the visit.

In theory of synergetics, the order parameter enslaves the other elements of the system to act the same. But, it has to be emphasized here, that the 'enslavement' in the process of self-organization in social system does not always refer to direct force like command and control. In other words, the enslavement can manifest in forms of voluntary and indirect force. In this case, the initiative got positive feedback from the neighborhood mostly due to voluntary enslavement as the result of informal personal approach. The community members found the offered institutions would bring benefit for them and the environment, therefore they voluntarily accepted the institutions. Indirect force can be shown for example when new inhabitants move in to the neighborhood, which wanted or not, the new inhabitants have to follow the rules/institutions that have been applied in the neighborhood, in order to be accepted.

Interaction and interrelation between the community members are also influenced by social cohesion between them. This social cohesion is developed through some communal activities routinely conducted in the neighborhood, for example meeting, *arisan* and *pengajian*. Through those activities, the community members exchange information and therefore 'enslavement' may happen.

### **3) Autopoietic Self-Organization**

Autopoietic self-organization refers to process of self-regeneration which in this case cannot be deeply analyzed because most of the key actors are still actively engaged in the neighborhood. However, attempts to do regeneration of activities or roles (learning from other people) have been done in some organizations, e.g. PKK and RW, but the effectiveness of the regeneration was not proven yet.

In relation with renewal of decision (learning from the past), the neighborhood has several formal and informal meetings which routinely conducted to discuss actual issues happen in the neighborhood. Those routine meetings are proven to be effective in renewing decision based on evaluation of actual condition.

#### **III.2.3.4. Reflections on Case Study**

From this second case study, we can learn several things which may contribute to the answers of the research questions in this thesis, i.e.:

- 1) Informal and personal approach is more effective in resulting positive feedback in the process of self-organization rather than formal socialization. This is due to voluntary enslavement of the receptor; the receptor voluntarily accepts the proposed rules/institutions from the giver.
- 2) Competition and reward system may also result in voluntary enslavement, which in this case were proven to be the key success in developing the initiative.
- 3) In this case, reduced numbers of visitors (came to the neighborhood) was the main cause of decline. This situation can be understood because the visitors create demand for some products produced in the neighborhood.
- 4) In order to maintain the established institutions, collective learning process (renewal of decision) is also important. In this case, it was shown by several routine meetings conducted in the neighborhood. Besides maintaining the established institutions, the meetings may also stimulate emergence of new initiatives, which may continue into another process of self-organization.

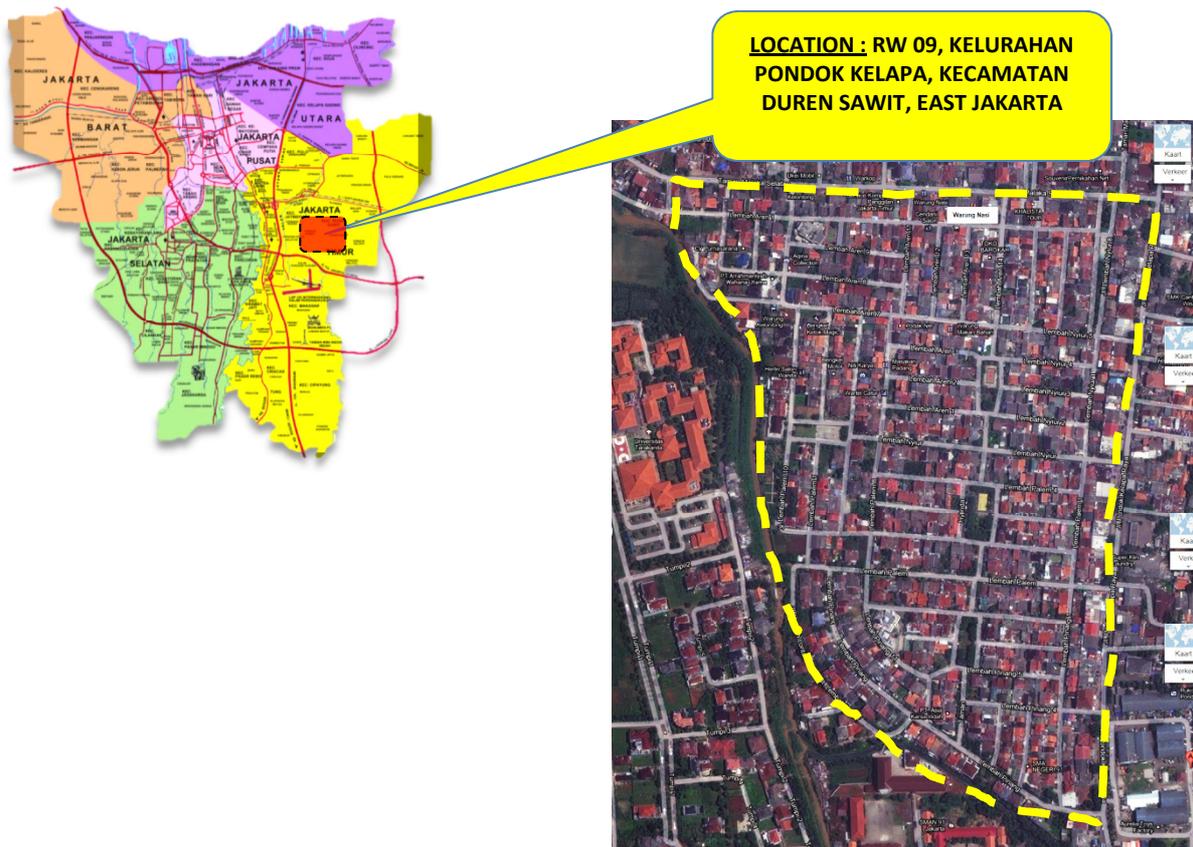
### **III.2.3. Case Study III – RW 09 Pondok Kelapa**

Different with Banjarsari and Rawajati, local initiative in RW 09 Pondok Kelapa was in forms of provision of community center and communal green space. In this case, the end of the self-organization process is clearer than two previous case studies, i.e. when the construction of community center and communal green space finished. The initiative had been appreciated by several achievements, e.g. the best neighborhood in DKI Jakarta in 2009, and the second best neighborhood in Indonesia in 2010 (Ani, 2013).

#### **III.2.3.1. General Information**

RW 09 Pondok Kelapa is situated in *Kelurahan* Pondok Kelapa, *Kecamatan* Duren Sawit, East Jakarta. The 26 ha neighborhood is inhabited by 991 household / 4113 inhabitants (Annual Report of RW 09 Pondok Kelapa, 2012). Basically, the housing was developed for local civil servant of DKI Jakarta, but currently most of the houses have been sold to third parties (Ani, 2013). Thus, the neighborhood is now more vary in livelihood. In general, civil servants are still dominant, but most of them have been retired. Besides civil servant, many inhabitants are businessmen and entrepreneurs.

In terms of economy, community members in the neighborhood have medium to high class economy, which in this case is an important characteristic because it effects the success of self-organization process.



Picture III. 10. Location of the neighborhood: RW 09, Kelurahan Pondok Kelapa, Kecamatan Duren Sawit, East Jakarta (source : Google map and analysis)

### III.2.3.2. Historical Analysis

The initiative began in 2003 when the new leader in the community (leader of RW) suggested the idea to build a community center as a place for communal activities which routinely took place in the neighborhood, such as meeting, *arisan*, etc. (Iwan, 2013). The idea was agreed by the community members and they got engaged in communal commitment to realize the initiative.

In realization of the plan, the commitment was shown especially in terms of financial aspect. Each house was asked to collect certain amount of money each month in order to support the construction of community center. The amount was Rp 100.000,- (less than €10,-), which was almost 10 (ten) times if compare to normal monthly retribution in the neighborhood. But, the community members had agreed and committed to realize the initiative. Therefore, the initiative was success to proceed without any significant obstacles until the construction finished in 2006 (Ani, 2013; Iwan, 2013).

In 2008, another process of self-organization took place in forms of development of communal green space (Iwan, 2013). The initiative came from the same caretakers of RW which had successfully realized the community center for the neighborhood. The idea emerged because the composting

activities in the neighborhood had produced so many composts for plant fertilizer but still could not find the market to sell the products. The idea was agreed by the community members and supported by PD. Sarana Jaya (developer of the housing), which gave vacant land near the community center to be developed as communal green space.



**Picture III. 11. The community center built as the process of self-organization.**

(picture by author, May 2013)

The development gradually took place until 2009, which finally brought the neighborhood as the best neighborhood in Jakarta (2009), and the second best neighborhood in Indonesia (2010) (Ani, 2013; Iwan, 2013).



Picture III. 12. Communal green space built as the result of self-organization process.  
(picture by author, May 2013)

Although this case has two significant parts of self-organization: the construction of community center and development of communal green space, in the analysis I prefer to explain both as one continuous process, which is detailed below.

### **1) Emergence and pre-development of initiative**

The pre-development of initiative was started with the emergence of the idea to build a community center in 2003. The idea was then followed by several internal meetings involving caretakers of RW, RT, and PKK, and also several public meetings involving the community members. The internal meetings were aimed to build commitment from key actors, in this case caretakers of the neighborhood, which would have important roles in the realization of the initiative. After commitment was built among the key actors, public meetings were conducted as to gain support (morally and financially) from the community members. Unpredictably, the result was outstanding. There was no significant resistance from the community members which meant the idea could be realized soon.

In case of communal green space, the predevelopment phase was almost the same, except that the initiative emerged in 2008, 2 (two) years after the construction of community center finished. In the development of communal green space, the community did not have to collect extra money to support it, but each RT had to collect 10 (ten) types of medicinal plants, to be planted in the communal green space.

## **2) *Development (amplification) of initiative***

The phase of initiative development started as the design and construction of community center and development of communal green space started, in different timeframe. During the construction and development of those two public facilities, there were no significant obstacles which might stop the process. But indeed, the construction of community center which took 4 (four) years of time, was too long for a normal construction, but it could be understood because financial support from the community members was accepted monthly.

In this case, this phase was time, money and knowledge intensive process, which required participation from each community member based on their capacity and capability. Fortunately, all the knowledge needed to design and construct the community center, and also to develop the communal green space were available in the community, therefore no support from external party was needed.

## **3) *Stabilization Phase***

In this case, the stabilization phase was related with operational and maintenance phase of the community center and communal green space. There was no significant issue with the maintenance of community center, but there was a big issue in the maintenance of communal green space due to annual floods. Minimum of once in a year, the communal green space and all the plants were ruined by flood and thus required to be restored. The restoration needed extra attention from the community and especially from the caretakers of RW. Until 2011, it was still successfully restored, but after that, the restoration hardly took place and there were still no efforts in solving the problem (Ani, 2013; Iwan, 2013).

Compared with two previous case studies, the neighborhood is less popular although after several achievements received in 2009 and 2010. There were not so many visitors came to the neighborhood to learn, thus no 'forcing' situation which make the neighborhood have to maintain what they had been achieved. Moreover, changing leadership also contributed to the problem. The new leader of RW (since 2012) might have different objectives from the previous one, therefore the restoration of the communal green space was not a priority in his program.

Admitted by one of the interviewees, *'the maintenance of the communal green space was also declining, due to flood and changing leader of RW in 2012'* (Iwan, 2013).

However, stabilization phase is not only about maintenance of physical building. It is also about maintenance of social cohesion and development of other new initiatives which may lead to another process of self-organization and bring the neighborhood into another desired state. In the first part of self-organization (the construction of community center 2003 - 2006), the neighborhood was proven to be able to stabilize its social cohesion and started another successful self-organization process (the development of communal green space 2008 – 2009). After the achievement as best neighborhood in 2010, however, the neighborhood was able to maintain its social cohesion, seen from many communal activities which still routinely conducted, and the absence of significant conflict among the community. But, lack of initiative from the new caretakers of RW made the social cohesion in the neighborhood remained a hidden treasure.

#### **4) Declination Phase**

The declination phase in this case was marked by changing caretakers of RW, which also changed the rhythm of self-organization process in the neighborhood. Until the observation took place in May 2013, there is no new innovation take place yet. This shows that leadership in the community is also important, in encouraging, developing, managing, and spreading the initiative comes from the community, which at the end bring the initiative through the process of self-organization. It means in a self-organized community, the initiative does not always come from the leader; it may also come from community members which then supported by the leader and caretakers of RW which had more influence to the rest of community members.

#### **III.2.3.3. Theoretical Analysis**

This case could be better understood under theoretical perspectives of self-organization, which in this thesis is divided into 3 (three) different emphasis, i.e.:

##### **1) Dissipative Self-Organization**

In this case, exchange of information between the neighborhood and its external environment, happened personally through the community members, for example in the design of community center. In the design process, much information had been absorbed from external sources, through reading, discussion, etc.

The 'out' information was shown in stabilization phase, after the neighborhood won several achievements and recognition from public. Although not so many, but some visitors came and

learned from the neighborhood, and thus the 'out' information was given to the external environment.

## **2) Synergetics Self-Organization**

In this case, interaction and interrelation between community members were shown to be the most important feature especially in the phase of pre-development and development of initiative. In pre-development phase, interaction was needed to build commitment among caretakers and community members, and also in creating some supporting rules/institutions in order to realize the initiative. In the phase of initiative development, interaction was needed to share personal knowledge which may contribute to the construction and development of two public facilities.

In this case, some informal rules/institutions were developed during the construction and development process, and those institutions were not necessarily and were not intended to be maintained after the process finished. Those institutions were, i.e.:

1. Each house had to collect certain amount of money (Rp 100.000,-) each month for supporting the construction of community center, which would last until the construction finish.
2. The construction of community center needs time, energy and knowledge. Therefore, each community members should participate based on his/her capacity and capability, in forms of idea, energy, material, financial, or others that may support the construction until it finished.
3. In the early development of communal green space, each RT should provide 10 (ten) types of medicinal plants to be planted in the communal green space.
4. After the communal green space was developed, every community member might take and use the plants in it for free.

In this case, we could see that social cohesion is a very important capital in the process of self-organization. This was shown in forms of commitment and trust. It was not easy to maintain the commitment and trust from the community member especially in financial aspect. But this neighborhood was proven to be able to optimally use it as a source in the process of self-organization. The success could be understood due to several reasons. First, transparency on the use of financial participation from community members, through monthly and annual report from caretakers of RW (Ani, 2013). Second, continuous meeting during the construction, between the key actors and community members, to discuss any issues concerning the construction process (Ani, 2013). Third, relatively stable community in terms of leadership and in/out movement of the inhabitants (during the construction and development).

### **3) Autopoietic Self-Organization**

Autopoietic self-organization in this case, is related with regeneration of actors and more important, regeneration of initiative. As explained earlier, during the construction and development of the two public facilities, there was no changing in caretakers of RW (the leader remained the same person for three periods), therefore the continuity of the project can be maintained. But, after the changing of caretakers of RW in 2012, the maintenance of communal green space tended to decline and moreover no new innovations took place to improve any aspect in the neighborhood. This condition showed that regeneration is not only important in forms of actor, but also in forms of idea and initiative.

Autopoietic self-organization was also shown in several routine meetings during the construction and development process. This meetings discussed any issues faced in the process which needed to be solved. In other words, there was always regeneration of decisions and ideas during the process which based on evaluation of past experience (learning from the past). This autopoietic behavior was proven to be important in maintaining commitment among the community members during the phase of initiative development.

#### **III.2.3.4. Reflections on Case Study**

From this case, we can learn several things that may contribute to the answer of the research questions, i.e.:

- 1) Social cohesion in terms of commitment and trust is important as a capital in the process of self-organization. In a process of self-organization like in this case, social cohesion should be maintained, especially during the process of construction/development, in order not to make the construction/development stop before it finish.
- 2) Another important condition in this case is the leadership in the neighborhood, which was able to influence the community to support the initiative, and to maintain the commitment and trust in the community during the process.
- 3) Variety of knowledge among the community members is also a valuable capital which may enrich the ideas and the initiatives developed in the process.
- 4) Regeneration of idea is important because it may prevent the neighborhood system from declining and moreover may able to bring the neighborhood to another process of self-organization which will improve its condition.
- 5) Regeneration of decision as a manifestation of learning process is also important especially during the initiative development to ensure the self-organization process successfully reach the desired state.

### III.3. COMPARISON OF CASE STUDIES

Each case study has its own strengths and weaknesses which may contribute to the answer of research questions in this thesis. In order to simplify all of the findings, I compare all 3 (three) case studies based on several aspects or criteria.

Generally, case studies of Banjarsari and Rawajati have several activities in common, in relation with green neighborhood and integrated waste management. Development of initiative in Rawajati, indeed was influenced by what had been done earlier in Banjarsari. However, those two case studies had different type of key actors involved, which made the historical development of each case study different from each other, and thus may enrich the final answers of the research questions. Involvement of external party (from outside of the neighborhood) as in the case of Banjarsari, was able to push the neighborhood to enter the phase of initiative development, but tended to be weak in maintaining what had been achieved, if compared to self-organization which fully developed from inside (of the system).

Different from two earlier case studies, the third case study (RW 09 Pondok Kelapa) shows other manifestation of self-organization at the neighborhood level, i.e. in provision of public facilities. In this case, the process of self-organization did not change the whole visual image of the neighborhood, as in the case of Banjarsari and Rawajati. Furthermore, the new institutions were established only during the phase of initiative development (construction of community center and development of communal green space) and were not necessarily maintained after that. In other words, it can be said that the third case study is a one-time project with a clear end image, thus the end of initiative development was also clear, i.e. when the building was constructed. It is unlike the case of planting, composting and recycling which have no clear end images and concrete target to be achieved.

**Tabel III. 1. Comparison on general aspects of case studies**

ASPECTS	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
Activities	<ul style="list-style-type: none"> <li>➤ <b>Green neighborhood:</b> <ul style="list-style-type: none"> <li>• Planting</li> </ul> </li> <li>➤ <b>Integrated waste management:</b> <ul style="list-style-type: none"> <li>• Composting</li> <li>• Recycle</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Green neighborhood:</b> <ul style="list-style-type: none"> <li>• Planting</li> <li>• Communal green space</li> </ul> </li> <li>➤ <b>Integrated waste management:</b> <ul style="list-style-type: none"> <li>• Composting</li> <li>• Recycle</li> <li>• Waste bank</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ <b>Provision of public facility:</b> <ul style="list-style-type: none"> <li>• Community center</li> <li>• Communal green space</li> </ul> </li> <li>➤ <b>Waste management:</b> <ul style="list-style-type: none"> <li>• Composting</li> </ul> </li> </ul>

ASPECTS	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
<b>Key actors</b>	<ul style="list-style-type: none"> <li>➤ PKK (women org.)</li> <li>➤ UNESCO</li> <li>➤ NGO – Yayasan Kirai Indonesia</li> </ul>	<ul style="list-style-type: none"> <li>➤ RW</li> <li>➤ PKK (women org.)</li> <li>➤ RT</li> </ul>	<ul style="list-style-type: none"> <li>➤ RW</li> <li>➤ PKK (women org.)</li> <li>➤ RT</li> </ul>
<b>Financial source</b>	Community + UNESCO	Community	Community
<b>Spatial Intervention</b>	<ul style="list-style-type: none"> <li>➤ The whole neighborhood was physically changed</li> <li>➤ There was a change in terms of building use: a house plot changed into composting center.</li> </ul>	<ul style="list-style-type: none"> <li>➤ The whole neighborhood was physically changed</li> <li>➤ There were changes in terms of land use → some vacant lands were developed into communal green space and composting center</li> </ul>	<ul style="list-style-type: none"> <li>➤ There were changes in terms of land use → vacant lands were developed into community center and communal green space.</li> </ul>
<b>Institutional Effect</b>	<ul style="list-style-type: none"> <li>➤ New institutions were built during the development of initiative, but only few of them are maintained until now</li> </ul>	<ul style="list-style-type: none"> <li>➤ New institutions were built during the development of initiative and most of them are still maintained until now</li> </ul>	<ul style="list-style-type: none"> <li>➤ New institutions were built during the development of initiative but not necessarily maintained after that</li> </ul>

In order to analyze the strengths and weaknesses of each case study, I focus on two turning points in the historical development on each case study. First is the turning point from pre-development phase to development phase. In this turning point, the analysis is on key success which make the neighborhood able to continue into development phase. Second is the turning point from stabilization phase to declination phase. In this turning point, the analysis is on issues faced by the neighborhood which make the stabilization phase start to decline.

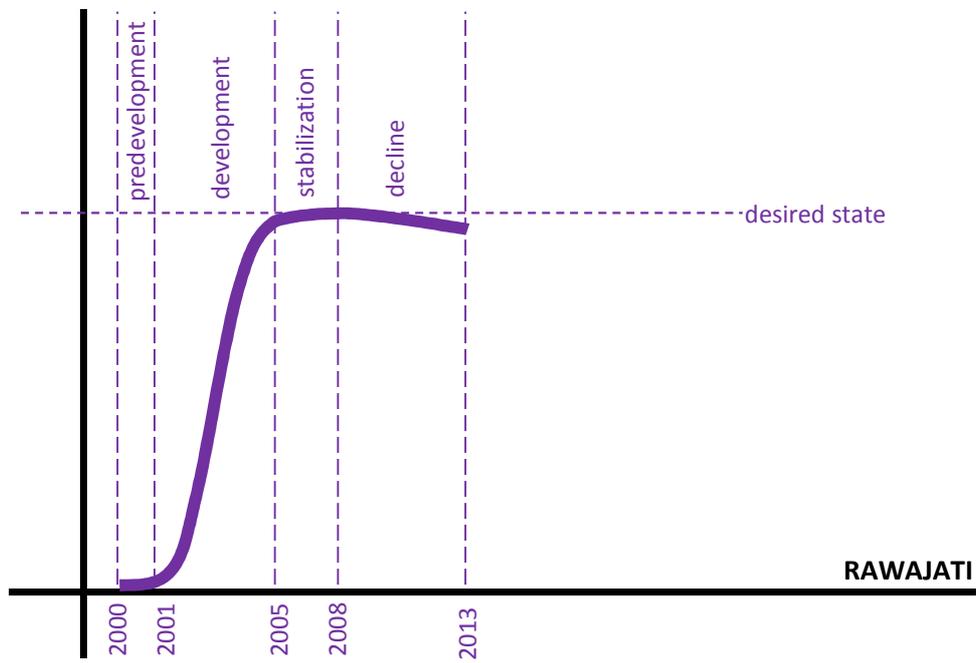
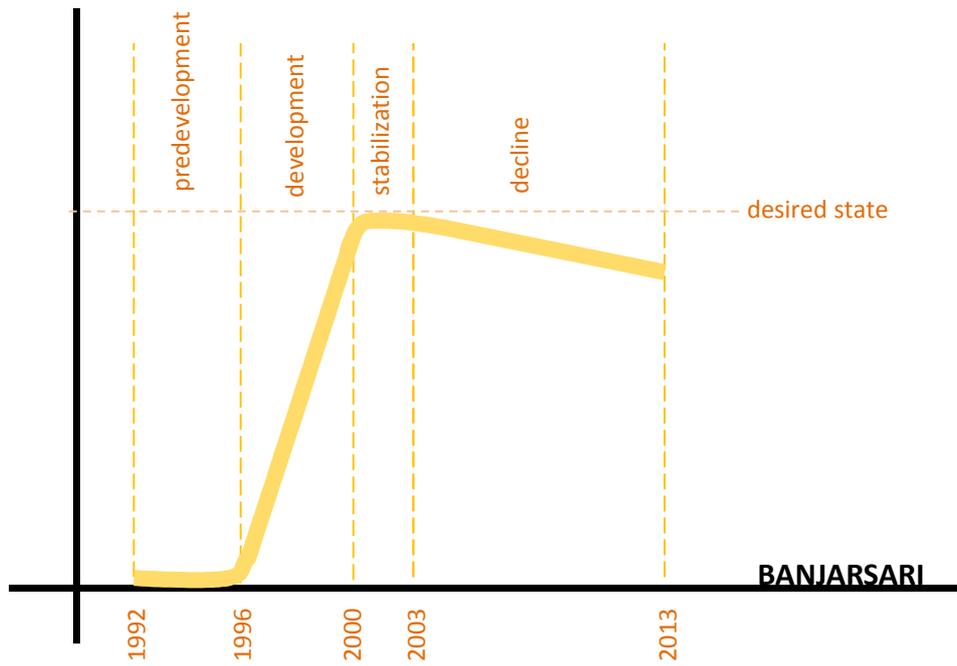
Before going to the analysis of strengths and weaknesses, here is the comparison of historical development of each case study.

**Tabel III. 2. Comparison of historical development of case studies.**

ASPECTS	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
<b>PRE-DEVELOPMENT</b>	1992 – 1996 (4 yr) <ul style="list-style-type: none"> <li>• Emergence of planting initiative</li> <li>• Formal socialization and personal approach</li> </ul>	2000 - 2001 (1 yr) <ul style="list-style-type: none"> <li>• Emergence of initiative</li> <li>• Several meeting</li> <li>• Field observation, including to Banjarsari</li> </ul>	2003 (1 yr) <ul style="list-style-type: none"> <li>• Emergence of initiative</li> <li>• Several meeting</li> <li>• Building commitment</li> </ul>

ASPECTS	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
		<ul style="list-style-type: none"> <li>• Building commitment</li> <li>• Socialization and personal approach</li> <li>• Competition</li> </ul>	
<b>DEVELOPMENT</b>	1996 – 2000 (4 yr) <ul style="list-style-type: none"> <li>• Implementation of IWM and 4R</li> <li>• Learning place for others</li> <li>• 2003 as the best RW in Indonesia and assigned as Ecotourism Kampong</li> </ul>	2001 – 2005 (4 yr) <ul style="list-style-type: none"> <li>• Implementation of planting (start 2001) and IWM (start 2002)</li> <li>• 2005 as the best RW in Indonesia and assigned as Agrotourism Kampong</li> </ul>	2003 – 2010 <ul style="list-style-type: none"> <li>• Construction of comm. Centre/2003 – 2006 (3 yr)</li> <li>• Development of comm. green space/ 2008-2009 (1 yr)</li> <li>• 2010 as the 2nd best RW in Indonesia</li> </ul>
<b>STABILIZATION</b>	2000 - 2003 (3 yr) <ul style="list-style-type: none"> <li>• New institution has been established</li> <li>• Learning place for others</li> </ul>	2005 – 2008 (3 yr) <ul style="list-style-type: none"> <li>• New institution has been established</li> <li>• Learning place for others</li> </ul>	2010 – 2012 (2 yr) <ul style="list-style-type: none"> <li>• Constructions were finished</li> <li>• Maintenance of community centre and communal green space</li> <li>• Learning place for others</li> </ul>
<b>DECLINE</b>	2003- 2013 (10 yr) <ul style="list-style-type: none"> <li>• Conflict</li> <li>• Some institutions are still maintained, e.g. planting</li> <li>• Some others institutions are lost/forgotten, e.g. : composting, recycle.</li> </ul>	2008 – 2013 (5 yr) <ul style="list-style-type: none"> <li>• Numbers of visitors decline → spirit decline</li> <li>• Regeneration is on-going</li> <li>• The built institution is still maintained</li> </ul>	2012 – 2013 (1 yr) <ul style="list-style-type: none"> <li>• Weak maintenance of community green space</li> <li>• Changing community leader</li> <li>• Discontinue innovation</li> </ul>

If visualized in graphic, the images are as follow:



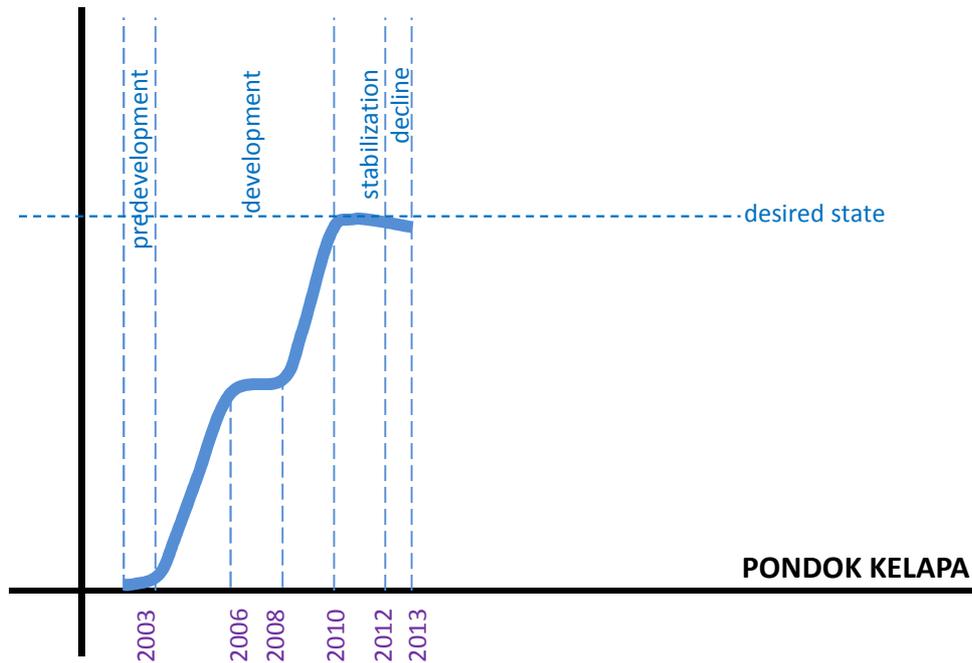


Figure III. 2. Qualitative impressions of historical development of three case studies.  
 (No reference to Y-axis can be made)

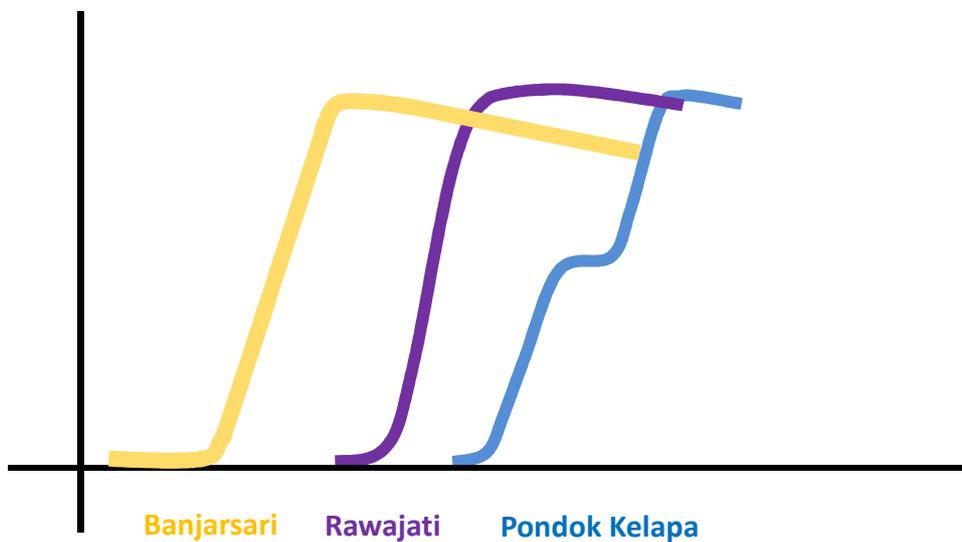


Figure III. 3. Comparison on qualitative impressions of historical development of case studies  
 (No reference to Y-axis can be made, therefore all case studies are assumed to have the same  
 level of desired state)

From those images we can see that all case studies show success in reaching the 'desired state'. The success of each case study in reaching its desired state was pushed or influenced by different factors. In the case of Banjarsari, it is clear that the development of initiative was pushed by involvement of external parties (UNESCO and NGO), in forms of pilot project. In Rawajati and Pondok Kelapa, the

development of initiative was internally developed through interaction and interrelation between community members.

From those images, we can also see that all case studies show declination after few years of successful stabilization phase. The declination phase was influenced by different issues and problems faced by each neighborhood. In the case of Banjarsari, the main issue was internal conflict which made social cohesion between community members weakened and thus made some activities and institutions which had been developed declined. Another issue was movement of the key actors out from the neighborhood, which failed to be balanced with regeneration of roles in the community. In the case of Rawajati, the issue was in reduced numbers of visitors to the neighborhood, which tended to decline the spirit of the community in maintaining some institutions which had been developed. In Pondok Kelapa, the main issue was in leadership change which affected the maintenance of communal green space.

**Tabel III. 3. Comparison on key success and issue of declination of case studies**

ASPECTS	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
<b>EMERGENCE OF INITIATIVE</b>	First initiative came from group of people <b>supported</b> by NGO	First initiative came from group of people (Caretakers of RW and PKK)	First initiative came from group of people (Caretakers of RW)
<b>KEY SUCCESS</b>	<ul style="list-style-type: none"> <li>• Positive feedback through <b>personal approach</b></li> <li>• <b>Support from NGO</b></li> </ul>	<ul style="list-style-type: none"> <li>• Positive feedback through <b>personal approach and competition</b></li> <li>• <b>Strong commitment</b></li> <li>• <b>Variety of actors and knowledge</b></li> <li>• <b>Regeneration of decision (learning process)</b> through routine meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Positive feedback through <b>agreement and involvement</b></li> <li>• <b>Trust and strong commitment</b></li> <li>• <b>Variety of actors and knowledge</b></li> <li>• <b>Regeneration of decision (learning process)</b> through routine meeting</li> </ul>
<b>ISSUE (OF DECLINATION)</b>	<ul style="list-style-type: none"> <li>• <b>Conflict</b> → weaken social cohesion</li> <li>• <b>Lost of some key actors</b></li> <li>• <b>Failure in regeneration of activities, roles and actors.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Reduced numbers of visitor</b> ('out' information) → prideness and spirit decline</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Discontinue innovation</b></li> <li>• <b>Changing leadership</b></li> <li>• <b>Failure in regeneration of idea</b></li> </ul>

Relating the key success and issues of declination with 3 (three) theories of self-organization, we can conclude that theory of dissipative, synergetics and autopoietic self-organization are useful in understanding how each neighborhood system can reach and maintain its desired state.

Dissipative theory which has emphasis in external relation between the neighborhood and its environment is useful in explaining the key success in the case of Banjarsari where the development of initiative was pushed by external parties. In Rawajati, this feature of external relation was also important in pre-development phase when visit to other neighborhoods was conducted to absorb knowledge and information from external environment. In this case, dissipative theory is also able to explain the correlation between reduced numbers of visitors with the declination of the self-organization process.

Synergetics theory which has emphasis on interaction and interrelation between elements of the system is also important in understanding the key success in most of the cases, because social cohesion in terms of commitment and trust was shown to be the basic requirements in all cases. Furthermore, synergetics theory is also important in understanding failure in maintaining the established institution in the case of Banjarsari, which was analyzed due to internal conflict.

Theory of autopoietic self-organization which has emphasis on self-regeneration/self-maintenance of the system also importantly contributes to understand the success of Rawajati and Pondok Kelapa in ensuring the self-organization process to be able to reach the desired state. The autopoietic activities in those two cases were shown in the regeneration of decision (learning process) during the phase of initiative development. In other hands, it also explains the declination issue in the case of Banjarsari and Pondok Kelapa, where the declination mostly because of failure in regeneration of actors, roles, activities and ideas.

**Tabel III. 4. Comparison on theoretical analysis of case studies**

THEORET. PERSP.	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
DISSIPATIVE	<ul style="list-style-type: none"> <li>➤ 'In'information via UNESCO and NGO</li> <li>➤ Ecotourism kampung (learning place for others →'out' information</li> </ul>	<ul style="list-style-type: none"> <li>➤ Field visit – learn from other neighborhoods →'in'information</li> <li>➤ Agrotourism kampung (learning place for others →'out' information</li> <li>➤ <b>'Out'/'in' reduced, spirit decline</b></li> </ul>	<ul style="list-style-type: none"> <li>➤ 'In' information via community members (actors)</li> <li>➤ Learning place for others →'out' information</li> </ul>

THEORET. PERSP.	RW 08 BANJARSARI	RW 03 RAWAJATI	RW 09 PONDOK KELAPA
SYNERGETICS	<ul style="list-style-type: none"> <li>➤ Personal approach</li> <li>➤ Socialization</li> <li>➤ New institutions were built but not fully maintained until now</li> <li>➤ <b>Failure in maintaining its social cohesion</b></li> </ul>	<ul style="list-style-type: none"> <li>➤ Meeting and building commitment</li> <li>➤ Socialization</li> <li>➤ Personal approach</li> <li>➤ Competition</li> <li>➤ New institutions were built and strongly embedded in the community until now</li> </ul>	<ul style="list-style-type: none"> <li>➤ Meeting and building commitment</li> <li>➤ New institutions were built during the process, but not necessarily maintained after the process finished.</li> </ul>
AUTOPOIETIC	<ul style="list-style-type: none"> <li>➤ <b>Some of key actors moved out</b> from the neighborhood → lost of important activities</li> <li>➤ <b>Failure in regeneration of actors, activities, and roles</b></li> </ul>	<ul style="list-style-type: none"> <li>➤ Regeneration is on-going → in PKK</li> <li>➤ Regeneration of decision and idea (learning process) through routine meeting</li> </ul>	<ul style="list-style-type: none"> <li>➤ Regeneration of decision (learning process) through routine meeting</li> <li>➤ <b>Failure on regeneration of idea</b></li> </ul>

\* Bold sentences in red cells show the failure factor.

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Three cases chosen in this thesis; Banjarsari, Rawajati, and Pondok Kelapa, show 3 (three) different practices of self-organization at the neighborhood level, in Jakarta, Indonesia. Even though those three case studies have also several characters in common, but the historical development of each case study, contributes differently to the answer of research questions in this thesis, and thus enrich our understanding on self-organization process in a developing city like Jakarta. The answers of the research questions briefly explained in the next chapter of this thesis.

\* \* \*

## CHAPTER IV

# CONCLUSION

This research was aimed to answer two research questions which has been explained previously in Chapter I, i.e.:

- **How can self-organization at the neighborhood level enhance urban planning and development in Jakarta?**
- **Which internal and external conditions enhance or constraint the process of self-organization?**

In directing answers to those questions, three hypotheses were given, i.e.:

- Hypothesis 1 – Phenomena of self-organization, especially in developing city like Jakarta can be seen as solution to urban problem rather than as the problem itself.
- Hypothesis 2 – If self-organization to be applied, there are several internal characteristics in the communities that need to exist first as the capital of the process.
- Hypothesis 3 – If self-organization to be applied, there are several external condition and circumstances needed as to support the process and make the process fruitful for urban development.

In answering two research questions and clarifying the hypotheses, 3 (three) instrumental case studies were chosen and analyzed based on historical development and theories of self-organization (dissipative, synergetics, and autopoietic), which then became the main input for the answers.

### **IV.1. HOW CAN SELF-ORGANIZATION AT THE NEIGHBORHOOD LEVEL ENHANCE URBAN PLANNING AND DEVELOPMENT IN JAKARTA?**

This first research question relates with the first hypothesis: “Phenomena of self-organization, especially in developing city like Jakarta can be seen as solution to urban problem rather than as the problem itself.”

Self-organization especially in developing cities tends to be understood in negative perspective. But this research shows that self-organization at the neighborhood level, especially in developing city like Jakarta does not always bring negative effects to the urban environment. The self-organization in urban area as discussed in many literatures, may also be the source of constructive and appreciated development, besides planning.

Shown in the case study of Banjarsari and Rawajati, process of self-organization does not only contribute to the improvement of environmental quality of the neighborhood, in terms of air quality, water quality, visual image, and reduced numbers of waste disposed to the landfill, but also in the improvement of neighborhood economy, in terms of extra income to the family. Indeed, if compared to city scale, those changes at the neighborhood level hardly affect the whole system of the city, because the concrete improvement can only be seen and felt locally in the neighborhood. But, city is a complex system, which means a small change in the micro level may influence the macro system through the process of positive feedback. In other words, if the initiative of green neighborhood in one place successfully spreads and influences other neighborhoods in the process of positive feedback, the effects may significantly influence the whole system of the city.

The spread of initiative (positive feedback) between neighborhoods was actually shown in the case of Banjarsari and Rawajati. As the first initiator of green neighborhood, Banjarsari was visited by other neighborhoods, including Rawajati, which then successfully created its own green neighborhood, and thus became the learning place for other neighborhoods. This process of learning between neighborhoods is a concrete manifestation of positive feedback in city level, which may enhance urban development in a city like Jakarta.

In relation with planning, there are two possible contributions of self-organization process to planning system. First, as suggested by Portugali, self-organization can be associated with just-in-time planning which can be concretely realized in two aspects: 1) the use of planning rules instead of end image, and 2) the use of planning court to evaluate planning proposals made by local inhabitants. Concerning the first aspect, I agree that the use of planning rules (instead of end image) can make the plan more flexible in dealing with changes. But, in specific cases like Jakarta, where self-organization processes dominate the urban development, it may become boomerang for the city itself if the self-organizations are failed to proceed in line with the city's development objective due to incapability of local authority to 'direct' the self-organization process. Concerning the second aspect, it is important to know the availability of human resources to run this planning court system. Local planning court can be applied only in a condition where human resources have sufficient capacity to understand legal

regulations and thus can evaluate planning proposals. In Indonesia, even in Jakarta, human resources with sufficient knowledge and capacity are not well distributed. This may be an obstacle to the implementation of planning court.

Second, as suggested by Boonstra and Boelens (2011), self-organization which understood as bottom-up initiative in planning, should change government's (and planner's) perspective in planning, from inside-out (operating from government-focused perspective and out to the society), into outside-in (planners open their view to socio-spatial initiatives on the 'outside' and become part of the self-organizing process). However, in reality, especially in Jakarta, the perspective of outside-in cannot be fully applied because central government always has specific targets and agendas which may influence policy, plan and program in local level. Therefore, I agree that planners should be able to see from both perspectives, and they should "position themselves in the middle, as actors integrated in the self-organization process itself." (Boonstra & Boelens, 2011, p. 117).

#### **IV.2. WHICH INTERNAL AND EXTERNAL CONDITIONS ENHANCE OR CONSTRAIN THE PROCESS OF SELF-ORGANIZATION?**

From historical and theoretical analysis of 3 (three) case studies, there are several findings in relation with the internal and external conditions (of the neighborhood) which may support and/or constrain the process of self-organization. However, the findings are case-driven, in the sense that it may not be applicable to other cases with different context. Nevertheless, it may still contribute to enrich the discussion of self-organization in urban development.

The **internal conditions** are, i.e.:

##### **1) Social cohesion among the community members, in terms of commitment and trust.**

Social cohesion is indeed the basic requirement in all three case studies to make the process of self-organization successfully happening in the neighborhood. Social cohesion can be built through interaction and interrelation between community members in formal and/or informal communal activities which exist in the neighborhood. This social cohesion should also be maintained during the process in order to make the system able to reach its desired state, and also after the process in order to stabilize the desired state.

##### **2) Personal approach, leadership approach, competition and reward, which may trigger the positive feedback of the initiative.**

The main feature in the process of self-organization is positive feedback of the initiative, which may be triggered by several conditions. Deducted from 3 (three) case studies, we can argue that

positive feedback may be triggered by personal approach, leadership approach, competition and reward.

Personal approach means the initiative is spread through chain reaction of person-to-person interaction and communication, as in the case of Banjarsari and Rawajati in the pre-development of initiative phase.

Leadership approach means the initiative is developed through the role of a leader, which is able to influence the whole community to do certain action, due to his/her charismatic personality. This was shown in the case of Pondok Kelapa.

Competition and reward is also proven to be effective in spreading the initiative in the community, as in the case of Rawajati. Moreover, this competition and reward may also be effective in triggering positive feedback between neighborhood (self-organization in city level).

Comparing those 3 (three) triggers of positive feedback, the personal approach took the longest time in showing the result, but the result tends to last longer than the other two. In contrary, leadership approach and competition-reward may instantly show the result, but when the leader change and competition-reward stop, the initiative may also stop.

**3) Variety of actors, which is needed to ensure diversity of knowledge and idea which will enrich the process of self-organization.**

This is indeed not a basic requirement of internal condition that needs to exist in the neighborhood. But if it exists, it may enrich the process of self-organization, in the sense that the neighborhood does not need external involvement to support the process.

**4) Regeneration of decision (learning process), which is important to solve issues happen in the process of self-organization.**

Learning process is important in every phase of self-organization process. This is a manifestation of acceptance of uncertainty in a complex system. Instead of reducing uncertainty, self-organized system accepts and absorbs those uncertainty by renewing decision through a collective learning process. This was shown in 2 (two) case studies, i.e. Rawajati and Pondok Kelapa.

**5) Regeneration of key actors (including their activities and roles), which are important to maintain the structure and institution that have been established.**

New institutions may be established during and after the process of self-organization. In the case of Banjarsari and Rawajati, the institutions should be maintained in order to preserve the desired state that had been achieved. Therefore, regeneration of key actors became important, because most of those institutions are informal which means they are not written formally in legal rules,

and thus made them easily forgotten. This was shown as in the case of Banjarsari, where moving out of some community members without any regeneration of actors may ruin some institutions that had been established.

The **external conditions** are, i.e.:

**1) Facilitating legal frameworks, which is needed to stimulate and encourage the self-organization process and to ensure the community acts legally in accordance with regulation.**

In Jakarta, self-organization at the neighborhood level is positively stimulated and encouraged by legal regulation, e.g. Decree of Minister of Internal Affairs No. 5 Year 2007. There are also other regulations in relation with the particular aspect of self-organization, for example in terms of community-based waste management. In Act No. 18 Year 2008 concerning Waste Management, community is encouraged, by incentive and disincentive, to reduce and manage household waste in its own neighborhood. The incentive can be seen in forms of reward for neighborhood which does the reduction and management of waste.

**2) International and national discourse/issue, which may stimulate NGO or international organization to take initiative in certain issue and involving the community in developing the initiative.**

In a process of self-organization which involves international organization or NGO, as in the case of Banjarsari, the aspect developed in the process is greatly influenced by international discourse/issue. Most of international organizations or NGOs tend to focus on certain issues which are discussed broadly in national or international forum. Moreover, some of them have also certain mission to introduce certain method/approach/paradigm through their program which may influence the aspect developed in the process of self-organization.

However, the process of self-organization which developed without involvement of external parties, may also be influenced by international or national discourse, as in the case of Rawajati. Success story of Banjarsari made the terms 'green neighborhood' and 'integrated waste management' became popular, due to media and publications, and thus became a discourse in Jakarta, and moreover in Indonesia. The discourse may affect other neighborhoods directly, or indirectly through policies or programs made by government in relation with the discourse.

**3) Competition-reward and recognition from public (pride), which are proven to be effective in stimulating the neighborhood to do the process of self-organization and maintaining the result.**

Competition between neighborhood and reward from government or other parties show effectiveness in stimulating neighborhoods to do the process of self-organization. One of competition and reward organized by central government is Adipura Award, which is actually an award for the cleanest city in Indonesia, but is currently adopted by local government (of Jakarta) for neighborhood level. There is also a competition and reward organized by several private companies, which is known as JGC (Jakarta Green and Clean). This is an annual award for the best neighborhood in criteria of green environment and waste management.

### **IV.3. THEORETICAL CONTRIBUTION**

Another finding in this research may also contribute to the literature of self-organization. Previously, there was a similar research by Meerkerk, Boonstra and Edelenbos (2012) concerning self-organization in urban regeneration, which used two different theories of self-organization, i.e. dissipative structure and autopoietic to explain the case studies. The research found that there was a “continuous interplay between autopoietic and dissipative system behavior” in actor relation, shown in the case studies.

Instead of focusing on relation between actors, I emphasize in my research the historical development of the case studies and use three different theories of self-organization to explain them. On the basis of analysis and findings from 3 (three) case studies discussed in Chapter III, I argue that interplay between dissipative, synergetics and autopoietic manifestation of self-organization, are indeed important as to reach and maintain the desired state which has been achieved. Shown in the case studies, continuous exchange of knowledge and information between the neighborhood system and its external environment (dissipative aspect) and strong social cohesion among the community members (synergetics aspect) are the basic requirements for successful self-organization at the neighborhood level. Furthermore, reduction in external relation between the neighborhood system and its environment (dissipative aspect), weakened internal relation (social cohesion) among the community members (synergetics aspect), and failure in regeneration of actors, roles and ideas (autopoietic aspect) are the sources of decline in the process of self-organization.

### **IV.4. RECOMMENDATION**

The main objective of this research is to give input and recommendation to local authority in Jakarta, in dealing with complex urban issues. Derived from the findings of the research, there are several recommendations I could give:

- 1) *Phenomena of self-organization at the neighborhood level are potential to be the solution to some urban problems.*

Concrete and positive contribution of self-organization processes have been shown in case studies for example in terms of provision of green space. According to Act No. 26 Year 2007 (concerning Spatial Planning) article 29, in relation with green environment, every city in Indonesia including Jakarta is required to provide a minimum of 30% of its area for green space, in proportion of 20% public and 10% private. Currently, Jakarta only has 9,6% of green space (www.tempo.co, 2010). This target may be partially achieved by optimizing the process of self-organization at the neighborhood level and moreover in city level. However, this process of self-organization in the development of green neighborhood may be encountered by other self-organization processes in the city, which seem to be more appealing, for example in forms of development of commercial center. In this situation, the role of government becomes important in ensuring both types of self-organization process run in accordance with objectives of city development, which may be shown in its spatial plan. Therefore, it is important to create the development vision or objective of the city, which is rational and rigid enough to be reached, but flexible enough in the way to reach it.

As a concrete realization, if local government wants to stimulate and support the self-organization process in the development of green neighborhood, rather than self-organization process in the development of commercial center, local government may give incentive to the former and disincentive to the latter. It may also stimulate the former by reward and competition, facilitate the process by giving support in terms of expertise and equipment, etc. But again, the roles depend on city's development vision and objective.

- 2) In dealing with positive self-organization processes at the neighborhood level (those which are in line with the city's development objectives), local authority may support the process by taking several roles:
  - a) Stimulate the process by reward and competition, incentive and disincentive, discourse, policy and/or program, etc.

Learning from the case studies, if local government wants to optimize the self-organization process in certain aspect, for example in green neighborhood, it has to create external conditions which may stimulate the process of self-organization to take place at the neighborhood level, e.g. by making the term 'green neighborhood' into discourse, policy and/or program. Directly, discourse on green neighborhood which is widely spread through publication and discussion in media, can be effective in influencing other neighborhoods to create the same condition. Indirectly, it can also influence third parties, e.g. private companies, NGOs, etc. to do their projects or CSR (corporate social responsibility) programs in relation with the discourse of green neighborhood. In addition to discourse, local government

may also issue policies and/or programs in relation with green neighborhood. Those policies and programs may provide legal and thus stronger basis for the action concerning green neighborhood.

Reward-competition and incentive-disincentive are also necessary to 'control' which self-organization should be supported, and which should be restricted. Reward-competition can be developed in forms of the best neighborhood as shown in the case studies. Incentive (for self-organization processes that need to be supported) can be given in forms of easiness to get permit for communal green space development, easiness in getting financial, knowledge and expertise support from local authority, etc., while disincentive (for self-organization processes that need to be restricted) can be given in forms of difficulty to get development permit, higher tax, additional planning obligation, etc.

- b) Facilitate the process in terms of resources; finance, equipment, knowledge, expertise, etc. Neighborhood may start a self-organization process but it may not be success in reaching the desired state. It may be caused by lack of resources needed in the process, for example in terms of financial, equipment, knowledge, expertise, etc. which makes the process terminate or even stop. In responding to the situation, local government may provide facilitation to the process, in specific forms needed by the neighborhood. To know the needs of the neighborhood, it is important to conduct periodic monitoring of the process, as recommended in the next point.
- c) Monitor the process in order to be able to act responsively to any issue happening in the process. Monitoring on the process of self-organization can be done by local authority (*kelurahan* level) through several methods, e.g. formal/informal meeting and discussion with caretakers of the neighborhoods, visit to the neighborhood, and/or communication via written document, such as report, proposal, etc. Those methods may be applied differently depending on the condition of the neighborhood. In certain situation, informal discussion may become effective in revealing some issues, for example internal conflict, etc. But in other situation, formal meeting and written report may be effective in delivering financial progress and problems.
- d) Ensure the process is in accordance with legal regulation. Positive self-organization can be recognized from its compliance with legal regulations. In relation with spatial planning, the main legal regulation is spatial plan. Therefore, local government should make sure the initiative on spatial intervention runs in accordance with

spatial plan, in terms of content and procedure. However, in order to allow and encourage self-organization process, spatial plan should be flexible enough in dealing with those initiatives. Further discussion on flexibility of spatial plan in relation with self-organization should worth its own research, which I discuss in the next sub chapter.

#### **IV.5. FUTURE RESEARCH**

This research mainly focuses on identifying positive contribution of self-organization process at the neighborhood level to the urban development and planning in developing city, specifically Jakarta. From description and analysis of case studies, explanatory (internal and external) conditions are formulated which furthermore are elaborated to give input to planning system in Jakarta.

In conducting this research, difficulty in getting internal validity is tackled by the use of several research methods, while issue in external validity is overcome by giving theoretical inference rather than empirical claims as conclusion. However, the impropriety of making empirical claims in social phenomena only by using several case studies may open wide opportunities for future research. Similar research can be conducted in the same city but in different aspect of self-organization (and thus different case studies), e.g. in housing, provision of business center, etc. Result of the research may enrich the discussion on phenomena of self-organization in the city which can be useful in giving greater and holistic understanding in macro level. Future research can also be conducted to see similar phenomena of self-organization at the neighborhood level but in different cities. This research may give broader insight into the phenomena of self-organization itself, regardless location. Emphasizing relation between self-organization process with content of formal planning, to answer 'how development plan can be adaptable to self-organization process', can also be interesting topic for future research.

There are still so many possibilities of topic in future research, as continuity to this research or entirely new research. However, conducting research as continuity to previous research may be more useful to build general understanding of certain phenomena, rather than conducting relatively new research.

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## APPENDIX

### TRANSCRIPT OF INTERVIEW

#### I. BANJARSARI

##### 1. INTERVIEW WITH MRS. HARINI BAMBANG WAHONO (One of initiator of green neighborhood in Banjarsari, 82 years old)

**Q** : Before Banjarsari became pilot project of UNESCO in integrated waste management, an initiative in green environment had already existed in the neighborhood. You were one of the initiator. How did the initiative emerge?

**A** : I was born in a family that have big concern on environment. My father taught me to live with and love nature. He gave each of us (his children) a plant to be taken care of, for our future. When the first time we moved in the neighborhood (Banjarsar) in 1986, my husband was chosen as leader of RT and I was the leader of PKK RT. Since I used to live with many plants around me, I felt uncomfortable with the condition in the neighborhood which was so plant-less and dry. Therefore, I intended to change the condition. Started with 'greening' my own house, I then encouraged other housewives to do the same.

**Q** : How did the initiative develop and widespread in the neighborhood?

**A** : In encouraging other housewives to do planting, I did personal approach to them, by teaching them write and read because most of women at that time could not write and read. After we personally got close to each other, then I shared my dream to them to make the neighborhood more comfortable to live. In practice, we did an activity called '*arisan*', in which the members collected plants and gave them to the winner (the winner was drawn in certain period) and helped her to arrange the plants in her house. The activity was appreciated by caretakers of RW and then widespread to the rest of the neighborhood.

**Q** : At that time, was there any financial support from other parties?

**A** : No, I started the initiative with financial support from my family. But, after my activities were widely known by public, I got some invitations as speaker in seminar, training, workshop, etc. Payment from those activities helped me financing my activities.

**Q** : Can you tell us, how could UNESCO decide Banjarsari as one of pilot project in integrated waste management?

**A** : In 1996, there were surveyors from UNESCO came to our neighborhood and saw the green environment that we had created. They were interested to make our neighborhood as pilot project in integrated waste management. The project was from 1996 until 2003. Because at that time I was leader of PKK RW, I was trusted to become contact person of the project. My house became 'House of UNESCO', a learning center for they who wants to learn about integrated waste management from our neighborhood. At that time, we were taught to sort garbage into organic and an-organic, and process them into compost which could be used by community members (for planting) or sold to other parties. All of those activities were financially supported by UNESCO.

**Q** : What was your role in the project?

**A** : I was trained by UNESCO to share, teach and train other parties about integrated waste management, which had been concretely applied in our neighborhood. The training was always started with motivation, continued with logical approach and ended with information on practical application (by showing some demonstration, for example in making household-scale compost). I was helped by a team which were also able to teach and give training to people. This was done also for regeneration. After the UNESCO project completed in 2003, I still do the training until now, under FORMAPEL (Forum Masyarakat Peduli Lingkungan / Forum for Environment Care Society), which is financed by government. The trainings are given in relevance with new and hot issues, e.g. green campus, green village, etc. which are currently part of (local) government's program.

**Q** : Were there any obstacles in the journey, especially in the development of green neighborhood in Banjarsari?

**A** : There were so many pros and contras to my activities. I almost gave up in 2002 because of lots of contras from people around me, but as an activist I have to be strong just like a tree; the taller it become, the stronger wind it has to face.

## 2. INTERVIEW WITH MRS. NUNING WIRJOATMODJO (was Project Director of UNESCO in Integrated Community-Based Waste Management Banjarsari)

**Q** : How was the project concerning integrated waste management started?

**A** : At the first time, UNESCO chose Banjarsari out of 3 (three) other locations. Banjarsari was not really good compared to other 2 (two) neighborhoods. There was activity to plant medicinal plants, but not really significant. It was chosen mostly because of good enthusiasm of the community members, which mostly were retirements, and access to the neighborhood was easy from other places. At that time, we appointed Mrs. Bambang as contact person, we taught and trained her many things to make her able to teach and train other people. The financial support was from UNESCO, and the operationalization of the project was helped by NGO, Yayasan Kirai Indonesia.

**Q** : What was the focus of the project?

**A** : In 1996 – 2003, focus of UNESCO was mostly on training; to make ‘school of environment’ concerning integrated waste management. We called it ‘integrated’ waste management, because it was not only about making compost. In this project, we taught also about planting, recycling, making healthy drink, etc. But, the project was actually beyond all that practical activities. It was about changing mind set of the community, in terms of environment. Mostly Indonesian people are lack of simple ecological knowledge; they do not know how their activities could bring positive or negative effect the environment. So, what we did at the very first time was an approach through religion and culture, because we believe that every religion delivers the same message, although in different language. After that we asked them to think logically based on evidence; we showed them negative effects of environmental destruction.

**Q** : Replant is the fourth ‘R’ after Reuse, Reduce, and Recycle. What was actually the aim in adding this replant activity into integrated waste management?

**A** : This fourth ‘R’ was added to optimally used the result of composting process. But ultimately, this replant program was also aimed for poverty alleviation because it can give extra income to the community. In other hand, it was also an attempt to save biodiversity.

**Q** : Were there any obstacles in the program?

**A** : Since 2000, there was conflict among community members which influencing the project and declining some activities.

**Q** : How do you see the result of this 4R program, especially for the neighborhood?

**A** : We can see that clean and green has been part of community's life in Banjarsari, until today. I think those are two 'messages' (among many others) that still can be maintained and thus received by new inhabitants and today's generation. However, in terms of composting, I realized that we failed, because no market available for the composts produced. Moreover, the waste management (sorting garbage and composting) is not in practice anymore. The community members refuse to sort their garbage because they think they have paid for the retribution (includes for cleaning and security). The composting center is still there but only used by several people.

The 'school of environment' is still in practice, but individually. After the completion of the project in 2003, there were still so many requests to UNESCO (to do training). But, due to no budget, users have to pay for the training by themselves. Until today, I still actively teach and train if there is a request.

**Q** : What make some activities disappear and not anymore in practice?

**A** : I think that is mostly because many people who were involved in the project moved out from the neighborhood, due to increasing property value in this neighborhood. I remember there was a time when one of us (the community members) held an event, such as wedding or birthday, the souvenirs were made by several housewives in the neighborhood. There were also some people which could make herbs from medicinal plants, but now they have moved out and nobody continue the activity. Today, inhabitants in Banjarsari are difficult to be organized to do something collectively, because I think they already feel comfortable with current condition.

## II. RAWAJATI

1. INTERVIEW WITH MRS. NINIEK NURYANTO (One of initiator of green neighborhood in Rawajati, was leader of PKK RW, currently active at *kelurahan* level)

**Q** : How the initiative on green neighborhood could emerge and develop in the neighborhood?

**A** : The first initiative came from caretakers of RW and PKK in 2001, with support from Lurah (head of *kelurahan*) and Camat (head of *kecamatan/district*). My motivation to be involved in the development of initiative was to improve my living neighborhood, which was so uncomfortable at that time. In order to start the development of initiative, we organized some visits to several places including Banjarsari, to show concrete realization of green neighborhood to the community members. The visits were aimed to motivate the community to realize the same condition in our neighborhood. The visits were followed by caretakers of RW, RT and PKK and some other representatives from community members. Commitment was then built after the visit.

The first program was to ask every household to plant 7 (seven) types of plants in front of their house, whether in open land (if available), or in vases. The plants were shared between community members. After success in small scale (house), we started to make parks and communal green spaces in vacant and unused land (which was originally location for sport facility, landfill, etc). The initiative was spread by continuous informal socialization in several communal activities in the neighborhood. The formal socialization was held only one time as the first launching of the green neighborhood program. The development of initiative was also triggered by competition among RT, which was held every year since 2003 – 2008.

**Q** : Were there any support from other parties in developing the initiative?

**A** : In the first development of initiative, there was no support from other parties especially in terms of finance. We self-financed all of our programs. But, *Camat* (head of *kecamatan/district*) always monitored our activity and supported us in forms of expertise and knowledge. However, after our neighborhood got recognition from public, because of achieving several rewards, many government institutions gave us aid in forms of composting machine, plants, green house, etc. Indeed, we avoid intervention of private company, because they mostly use us for their own popularity.

**Q** : What were the achievements received by the neighborhood?

**A** : In 2003, our neighborhood was awarded as the best neighborhood in municipal level (South Jakarta), in 2004 in province level (DKI Jakarta) and in 2005 in national level (Indonesia).

**Q** : What are the activities included in waste management in this neighborhood?

**A** : In 2002, we have already started the composting activity, though still in household scale. We got the knowledge about composting from *kecamatan*. We then centralized the composting activities in a composting center. Therefore, the community members were asked to sort the garbage into 3 (three) types; organic, valuable an-organic, and others (invaluable an-organic). The organic waste was brought to composting center, the valuable an-organic was brought to waste bank, and invaluable an-organic was brought to landfill. The sorting system was managed and organized by RT level.

The waste bank is a system to collect an-organic waste that can be sold to third parties (valuable an-organic waste). Every community member can save their an-organic waste in the waste bank and therefore gets payment after certain period. In order to reduce an-organic waste, we also recycle some wastes, e.g. straws, papers, plastic bottle, styrofoam into table mat, handbag, vases, flowers, etc. which can be sold when visitors come to our neighborhood. In terms of planting, we also encourage the community to plant medicinal plants which then were processed by several community members in a sub-neighborhood (RT 04) to become herbs. In our neighborhood, every sub-neighborhood is encouraged to have its own product which may add extra income to the community members.

**Q** : Were there any obstacles in the process?

**A** : We faced some obstacles especially in terms of finance. Because the main source of finance was only from operational budget of RW and RT, from community members, and sometimes from our (caretakers of neighborhood's) private money, we sometimes faced lack of financial support in doing some of our activities. Getting money from annual *musrenbang* (Musyawarah Perencanaan Pembangunan / Discussion Forum on Development Planning) was not easy.

**Q** : Was there any regeneration program done to make the initiative continue to develop?

**A** : Yes, I have been leader of PKK RW since 2001 – 2012. Since last two periods (6 years ago), I have done some regeneration to other caretakers of PKK. Now, there is a team that can be trusted, at least to maintain what has been achieved. However, I realized that there was a declination starting in 2008 which might be caused by lack of internal establishment (and too

much external orientation), and might also be caused by cessation of competition between RT (sub-neighborhoods).

2. INTERVIEW WITH MR. SUPARDI (army retirement, was involved in the process of initiative development, currently is the one who take care the composting process)

**Q** : How the initiative on green neighborhood could emerge and develop in the neighborhood?

**A** : At the first time, leader of RW (Mr. Samboedi) wanted to see his neighborhood clean and free from pollution which mostly came from waste combustion. In this 12,5 hectares neighborhood, we had at that time 6 (six) spots of waste combustion. Because of the pollution, he asked us to process the waste into compost. In his childhood, he lived in a very clean neighborhood in Jogjakarta, maybe that what made him care so much on environmental issue. To realize his vision, we did several meetings to discuss the initiative, which was continued with field visit to Banjarsari, Kampong Daun, Al-Zaytun, Kota Wisata, and other locations, almost every 3 (three) weeks for 4 (four) months. Funding for this activity mostly came from his private money. After the field visits, we discussed the result in several meetings before we socialized the program to the community members. Almost every day socialization were held, but the result was not really effective. Then the team came to every RT (sub-neighborhood) to get closer to the community. This socialization spent almost 8 (eight) months of time before showing concrete result.

**Q** : What was the first activity to be socialized?

**A** : The first activity was planting, because planting could raise someone's love to his/her environment. After that, because planting needed so much fertilizer, composting activity was started in 2002. At the first time, the composting was done in household scale, but then we made it collectively in the composting center, household only did the sorting. Before, waste/garbage was seen as something dirty and has to be avoided, but now paradigm in our community has changed; waste/garbage become our 'best friend'. Actually this composting activity is also mandated in Act No. 18 Year 2008, which states that every people has to take care and process their own waste in their neighborhood.

**Q** : How is the operationalization of waste management in the neighborhood?

**A** : Organic waste is collected from each house. The collecting system is organized by each RT (sub-neighborhood) and thus may differ from one RT to another. Generally, each household has to pay Rp 10.000 – 15.000 (+/- €1) each month for the collecting service. The organic waste from every household is then brought to the composting center and processed into

compost. Every day, each household can produce 6 (six) ounce of organic waste, the total for this neighborhood +/- 624 kg/day, including waste from public facilities.

**Q** : Is there any financial support from other parties in the composting activity?

**A** : Government supposed to support and facilitate composting process in every neighborhood. They promised us to give Rp 5 million (+/- €40) each month for the operationalization cost, although each month we actually need more or less Rp 25 million (+/- €200) for operation of the machine and salary of the workers. Until today, we work without payment, only because of our concern to our neighborhood. However, we can get extra money from the sale of the composts.

**Q** : How about the waste bank system, how does it work?

**A** : The target of the program is mainly school age children, to raise their awareness to their environment. They can collect certain an-organic waste (plastic bottle, paper, board, etc.) in the waste bank, the waste bank then sell the wastes to third parties, and after certain period, the children can withdraw their money.

3. INTERVIEW WITH MRS. SILVY (housewife, was involved in the process of initiative development, currently is the leader of PKK RW)

**Q** : What is the dominant livelihood in the neighborhood?

**A** : Most of the community members are army retirements, only 7 (seven) people are still active as army. There are 6 RTs (sub-neighborhoods) lie in (army) housing complex, and 4 others in kampong. But, we live together without conflict, because we (caretakers of the neighborhood) always treat our community the same, we always support their positive activity. They (community who live in kampong area) also have their special products (mostly snack) which can be sold in exhibition or when visitors come to our neighborhood.

**Q** : To what extent those activities (of recycling, composting, making special snacks, herbs, etc.) can improve economic condition of the community?

**A** : The recycle products, composts, herbs, snacks can add extra income to the community, but not much, because we still don't have fix markets for our products. We only sell them in exhibition, or when visitors come to our neighborhood.

**Q** : What are the factors which can make the initiative successfully developed in the neighborhood?

**A** : I think it was mostly because of good enthusiasm and positive response from the community members. We also believe that informal personal approach is more effective than formal approach.

**Q** : What is the future plan for this neighborhood?

**A** : Governor wants to make our neighborhood as 'kampong herbal', therefore we encourage the community to plant at least 5 (five) types of medicinal plants in front of their house.

4. INTERVIEW WITH MR. WARSO (was involved in the process of initiative development, currently responsible when visitors coming to the neighborhood)

**Q** : What was the condition of the neighborhood before appointed as agro-tourism kampong?

**A** : Our neighborhood was just like any other neighborhood. We have 10 RTs (sub-neighborhoods), 6 (six) of them lies in housing complex and 4 (four) others outside the complex (kampong). But, there is no fence or border between the housing complex and the kampong, therefore we are used to interact without feeling any difference.

**Q** : How was the process until this neighborhood can be appointed as agro-tourism kampong?

**A** : The process was started in 2000/2001, initiated by leader of RW (Mr. Samboedi) who wanted to make this neighborhood green and clean. In 2001, we started the 'cleaning Friday' program, in which every sub-neighborhood sent 10 (ten) persons to do the cleaning in every corner of the neighborhood. We also had planting program which was disseminated by PKK. Those activities yielded a positive result; in 2004 we were awarded as the best neighborhood in DKI Jakarta. The achievement made the spirit of the community raised, and we started to build communal green space in several places, including the one near the RW office. The green space was developed by ourselves, mostly by army retirement, and used our own funding. In 2005, our neighborhood was then appointed as agro-tourism kampong.

**Q** : Were there any interventions from government in the process (from 2001 – 2005)?

**A** : In 2001 – 2005 we did not get any financial support from any parties. But after we got recognition from public, several government institutions gave us aids, in forms of equipment, plants, green house, etc.

### III. PONDOK KELAPA

1. INTERVIEW WITH MR. IWAN (was involved in the process of initiative development, currently trusted in maintenance of the community center)

**Q** : Can you give us general information about this neighborhood?

**A** : This neighborhood is inhabited by +/- 950 KK (4000 people). Most of them are civil servants in local institution (DKI Jakarta), some of them are businessmen. They are middle to high class in economy. This housing complex was indeed built for civil servants of local government, but now most houses were already sold to third parties, and thus make the community more diverse than before.

**Q** : What were the achievements received by the neighborhood?

**A** : We were awarded as the best neighborhood in East Jakarta in 2009/2010 and the second best neighborhood in DKI Jakarta in 2011, not only because the construction of community center and communal green space, but also because of several routine activities in our neighborhood.

**Q** : How the initiative to build community center and communal green space could emerge and develop in the neighborhood?

**A** : The community center was constructed in 2003 – 2006, in a vacant land owned by PD. Sarana Jaya (developer of this housing complex). The funding for this construction came from community members, without any support from government. We collected Rp 100.000 (+/- €10) each month to fund the construction. The construction itself was coordinated by one of community member (Harry Polly, was an engineer in agriculture, but developed his skill also in design and construction). The communal green space was initiated after that, in 2008, because our neighborhood produced so many composts (from the composting activity) but we had no markets to sell the composts. Therefore we decided to build communal green space. In that green space, we had 110 types of medicinal plants which can be used freely by the community members.

**Q** : How to make the community members willing to pay that amount of money each month?

**A** : When the leader of RW in that period (Mr. Arifin) was elected, the construction of community center was part of his program. After several meetings discussing this plan, then

we agreed to collect money from the community members each month in an amount of Rp 100.000. Later, he became leader in this neighborhood for 3 (three) subsequent periods.

**Q** : How is the process of waste management in the neighborhood?

**A** : Due to small capacity of the composting center, every day we can only collect waste from 3 (three) sub-neighborhoods. We have 12 (twelve) sub-neighborhoods in total, thus waste in one house was collected once in every 4 days. Composting is still done manually until now, without using any machine. Few times we were offered to use composting machine, but the leader of RW rejected them, because it will only add extra cost for operationalization. Waste sorting was done in the composting center, not in every household. Actually we had already asked the community to sort their waste, but there were so many reasons which made them reluctant to this program. There are several workers in the composting center, which are paid monthly from retribution collected from every household (Rp 10.000/month) and from rental fee of using the community center (applied to outsiders). They also get money from selling an-organic waste to third party.

2. INTERVIEW WITH MRS. ANI (was involved in the process of initiative development, currently is secretary of RW)

**Q** : How could the initiative to build community center emerge?

**A** : We have so many communal activities in the neighborhood, involving 50 – 100 people which need to be facilitated in certain spaces, therefore we decided to build community center. The construction process was done by the community, under one trusted coordinator. We did not use any contractor service.

**Q** : How could the initiative to develop communal green space emerge?

**A** : Actually at the first time, we encouraged the community to plant medicinal plants in their houses, but because we still have a vacant land of +/- 1000 m<sup>2</sup>, then we decided to develop communal green space with specialization in medicinal plants. We asked each sub-neighborhood to collect 10 (ten) types of medicinal plants to be planted in the communal green space. Planting in private houses were ineffectively practiced, because most of the houses do not have empty spaces for plants.

**Q** : How is the maintenance process of community center and communal green space?

**A** : We face several issues in maintenance of communal green space. The main problem is due to annual flood which ruin the green space. We cannot afford if every year we have to renew the green space. We are still thinking how to solve this problem.

**Q** : Were there any issue in the process of initiative development, especially concerning amount of money the community has to collect each month?

**A** : No, because most of the community has middle to high class economy. And the most important is that they can concretely feel the usefulness of community center and communal green space. Currently, all communal activities are held in the community center.

**Q** : Were there any financial support from government in the construction of community center and communal green space?

**A** : No, we did it by our own funding. But after we won several achievements, we got some support in forms of plants and equipments. Every year we could propose our development plan and program to government in a forum called Musrenbang (Musyawarah Perencanaan Pembangunan / Discussion Forum on Development Planning), therefore every neighborhood has representatives (*Dewan Kelurahan / kelurahan council*) to discuss the plan/program in the forum. But it is not easy to get fund from that forum though.

**Q** : What were the achievements received by the neighborhood?

**A** : In 2009, we were awarded as the best neighborhood in DKI Jakarta and in 2010 as the second best neighborhood in Indonesia.

**Q** : Who played the most important role in the development of initiative?

**A** : In this case, leader of RW took the most important role as to initiate, support, and lead the community. He should be charismatic and loyal. PKK also took important role because they had more time to meet and discuss several issues happened in the neighborhood.

**Q** : Were there any issues in community development, so far?

**A** : We have several routine activity, e.g. caretakers meeting (every Friday), eradication of mosquito breeding (every Friday), monthly medical service, blood donor (every 6 months), etc. Our togetherness is built through those activities. If we have some program, we are helped by *dasawisma* (*dasa* = ten, *wisma* = house, group of 10 houses, though in practice the number is flexible, but +/- 10 houses) to socialize the program. Every sub-neighborhoods have +/- 3 (three) *dasawisma*.

\* \* \*