A PROPOSAL FOR INTEGRATED GOVERNANCE BETWEEN SYNERGETIC DYNAMICS OF COMPLEX SOCIETY: SYNERGIC ADMINISTRATION

Case Study: Social Synergy Development during the Chaos and Self-Organization Process after Earthquakes of 1999 in Turkey.

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1. INTRODUCTION

Settlement systems are complex and dynamic systems (Forester, 1969; Chadwick, 1971), and with the process of strong interaction and rapid transformation they reached high complexity levels which cause "unpredictable futures" and "uncertain situations". That's why the behaviors of society could be perceived "chaotic" which creates ontological problems for planning. "Complexity and synergetic theories" which explain the rules of transferring a new and more complex order, and the principles of self-organization processes. In chaos situation and self – organization processes, systems continuously develop new communication and interaction channels between sub – systems, organs and elements and evolve into new and more complex systems. The new order is hinted in the communication and interaction channels that pre-dominate the process of self – organization (Ashby 1961; Mittenthal & Baskin 1990; De Guzman & Kelso 1990 ;...). The occurrence of new order is a shift on the line of evolution. From this point of view, the model of "synergetic dynamics of complex society" which tries to define an abstract and holistic framework for the complex society has been developed according to the logic of fractal geometry and the principles of self – organization process (Diker Camlibel, N.; 2003). How could society self – organize and create synergy? Could planners join this self – organization process of society? And, could they orient this social synergy? For understanding and finding answers for these questions, the research was undertaken during a significant case of chaos and self-organization process after earthquakes of August 17th and November 12th 1999 in Turkey. We could see social synergy, which existed in self-organized communication – interaction channels between different dynamics and different levels of society. There could have been identified three loops of circulation in this self-organization process which were 1st "chaos", 2nd "self-organization" and 3rd "passing through the new order". Especially in the 1st loop of "chaos", the permanent and emergency solutions had been developed by social synergy and unfortunately planners couldn't had been joined or participated in the creation and orientation of this social synergy. Social synergy could have behaved faster & more flexible than planners who have involved in public bureaucratic institutions. In the 2nd loop of self-organization dynamics, social synergy had started to grow within new communication and interaction channels between civil society, local government and state organizations in different levels of synergetic dynamics. According to the social synergy developments within new communication–interaction channels between different levels of synergetic dynamics of complex society, and the movements for integrated governance between civil society, local government and state organizations, I have attempted to develop a new holistic model as a framework which could be named "Synergic Administration". And the new role of planning's could have been defined as "synergist" who effect or motivate the formation and development of social synergy in this model. There are dynamic platforms and caucuses and councils for horizontal integrations in each level of society, and communication & interaction channels like neural

networks for vertical integration between different levels of "synergic administration".

2. SCIENCES OF UNCERTAINTY – COMPLEXITY AND SYNERGETICS

In the last quarter of 20th century, looking to whole has been become an important matter for scientists and everything had been began to perceive uncertain and chaotic. We could say two reasons for this circumstances, one of them is globalization which cause complex global relations and interconnections, and the other is over specialization in science where specialists had started to loose the ability for seeing the cause and effect relations between facts, situations and phenomenon's, they have lost the common language and understandings. With the developments in science, especially after the Heisenberg's "principle of uncertainty" and the Einstein's "theory of relativity", there have been emerged a change in the concept of determinism in philosophy of science.

Some specialists in positive sciences who have started to analyze chaos in biological, physical and chemical processes, have perceived there are an order & a harmony in chaos situations of nature. For understanding and adapting the order of nature to the other fields of science, they have tried to determine the self-organization processes in chaos situations and to integrate their specialized knowledge with others for developing holistic understanding which defines "the principles of self-organization processes" in open, dynamic, non-linear, complex and living systems of nature. They have developed some theories and approaches which are ***non-linear dynamic systems*** (Nicolis & Prigogine 1977; Casti 1985); ***chaos*** (Gleick 1997; Prigogine & Stengers 1984; Faigenbaum 1981); ***self - organizations*** (Ashby 1961; Mittenthal & Baskin 1990; De Guzman & Kelso 1990,...), ***complexity*** (Kauffman 1990; Flood & Carson 1993; Lam & Natroditsky, 1992) and ***synergetics*** (Fuller, 1975; Haken 1977, 1996)…

Theories of "complexity and synergetics" explain the rules of transferring a new and more complex order, and the principles of self-organization processes. In chaos situation and self – organization processes, systems continuously develop new communication and interaction channels between sub – systems, organs and elements and evolve into new and more complex systems (Fig.1). The new order is hinted in the communication and interaction channels that pre-dominate the process of self – organization (Ashby 1961; Mittenthal & Baskin 1990; De Guzman & Kelso 1990; Flood and Carson, 1993). The occurrence of new order is a shift on the line of evolution. Therefore, these theories could be interpreted as "***neo-evolutionist theories***" and as a new version of Ludwig von Bertalanffy's General System Theory.

2.1. The Process of Self-organization and Complexity

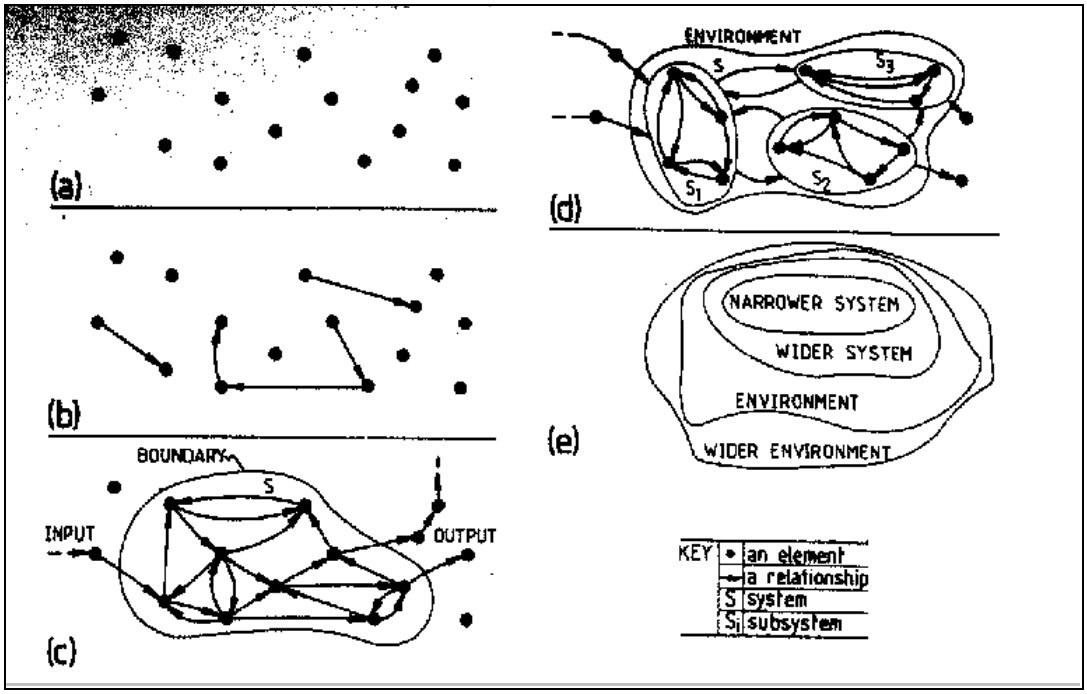

Fig.1. The process of self-organization and passing to a complex system
"Defining a system: (a) a set of elements devoid of relationships; (b) a set of elements with only limited relationships; (c) a system with many relationships between elements, boundary of a system, its inputs and outputs; (d) subsystems within a system (S is a system, S1, S2, and S3 are subsystems); (e) narrower system, wider system, environment, wider environment" (Flood and Carson, 1993: 9).

The original Latin word *complexus*, means "entwined", "twisted together". Similarly, the Oxford Dictionary defines something as "complex" if it is "made of (usually several) closely connected parts". There is a complex whole contains distinct and connected parts. Therefore, a system would be more complex if more parts could be distinguished, and if more connections between them existed.

After some investigations about the self-organization processes of non-linear, dynamic, living complex systems in the fields of biology, chemistry, and physics, the basic principles in self- organization processes could be summarized as:

1 Self-similarity: Similar Order in Each Scale of Organization or Organism The power of self-similarity occurs in the high level of complexity (Fig.2, Fig.3).
2 Building Communication and Interaction Channels Between Similarities
3 Building More Complex System as a Whole than Before

There is, however, also a phenomenological approach to cope with complicated structures we are observing in nature, namely fractal structures (Mandelbrot,1982). The principle is easily explained by means of Koch's snow flake (Fig. 3), where the same procedure is again and again applied at various scales of space.

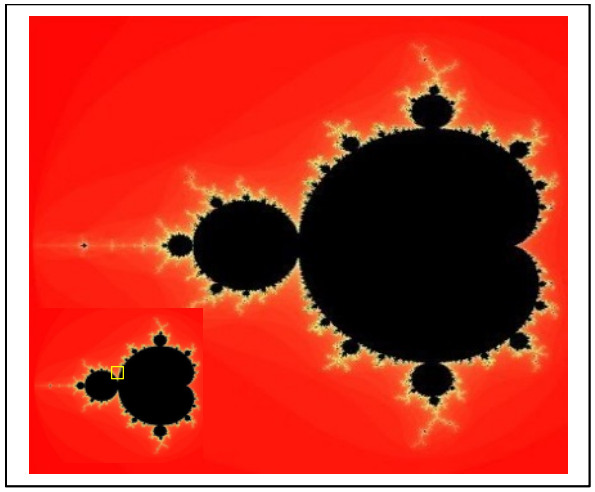

Fig.2. Mandelbrot groups, parts have similar order with whole (Gleick, 1987:128)

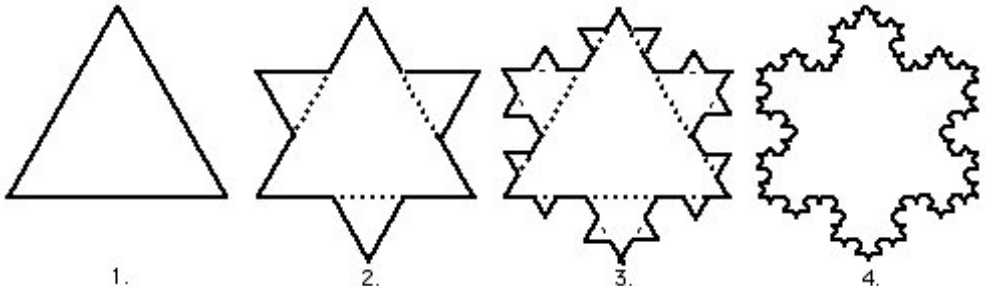

Fig. 3. Construction principle of Koch's snow flake (Mandelbrot,1982)

And I attempted to summarize this process in Fig.4. In chaos situation, there is high level of heterogeneity and entropy which means various separated & specialized parts, organs, sub-systems … which cause increasing level of errors in information flow and negative feedbacks and at the end everything becomes unpredictable and uncertain. However, there are some things start to change, new connections and communication – interaction channels between various separated parts according to similarity principle were started to developed, and they built new unions and new connections between unions by themselves. As a result a new and more complex order and system were self-organized. New order serves regular information flows and system works regularly, so the system reproduces some specialized different parts and the entropy increases again ….and cycle of life flows like waves between chaos and order.

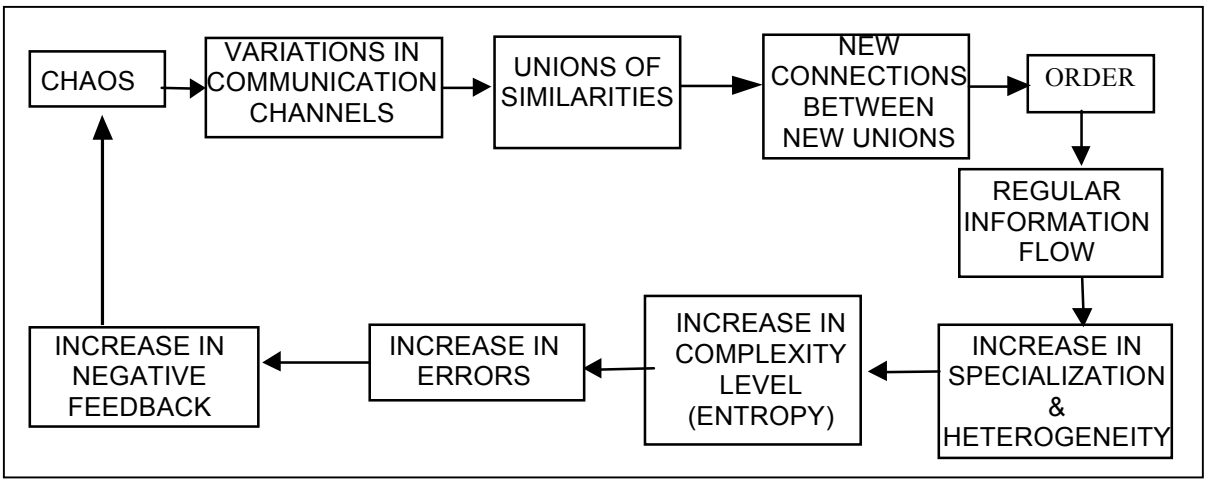

Fig.4. The process of self-organization (Diker Çamlıbel, 2003:70)

2.2. Synergetics

Energy and synergy words are companions and the meanings of those concepts have been tried to summarize in the table 1. I've proposed only the "Synergist / Synergizer" concepts those are not exist in English Dictionary.

Table 1. The Meaning of Synergy and Synergetics Concepts

ENERGY: The capacity for action, work or accomplishment	**SYNERGY:** The *collective action* of two or more substances, organs, or organisms to achieve an effect of which *each is individually incapable.* The emergence of great and *unexpected power* which is more than two parts / organs / organisms join together and to be "one" (whole)
ENERGETIC: Having, exerting, increasing, developing, or displacing energy	**SYNERGETIC:** A dynamic, powerful, living group or organization who *can self-organize by developing communication & interaction channels within sub-systems or with others*, and can create, and can develop synergy by transferring their static energy to kinetic energy
ENERGIC: Having performance for an action or work	**SYNERGIC:** Having synergy or having the ability to develop synergy
ENERGIZER: A factor which effect or motivate the formation & development of energy	**"SYNERGIST / SYNERGIZER":** A part, group, or organ which effect or motivate the formation & development of synergy (Diker Camlibel, 2003)

R. Buckminster Fuller who has explained "Synergetics" with explorations in the geometry of thinking, he has used triangles and multi-dimensional connections and multi-dimensional forms like octahedrons, tetrahedrons for conceptualizing the calculations of power or energy

which complex forms have. Each connection between parts creates unpredictable energy and behavior, and according to him synergy means behavior of whole systems unpredicted by the behavior of their parts or components or subassemblies of their components taken separately from the whole. (Fuller, 1975: 3)

German theoretical physicist Herman Haken (1977, 1996) who could be seen as the father of "Synergetics" and according to him synergetics is an interdisciplinary field of research that deals with the self-organization of structures and functions in systems that are composed of many individual parts, elements, or sub-systems that quite often interact with each other in a complicated fashion. He has started synergetics considerations based on brain functions differently from the traditional approaches of brain interpretations. According to him, the traditional experimental and theoretical study of brain functions rests on the single cell, while in synergetics they focus on the action of whole network of cells. Thus instead of treating the individual, they consider an ensemble.

Haken explains that; "according to the traditional theories, we recognize our grandmother cell by means of an individual cell in our brain that identifies her. In the synergetics approach, recognition of patterns is achieved by the action of an assembly of cells. Similarly, steering of motion is attributed to a steering cell in the traditional approach, while in synergetics it is the outcome of the action of an assembly of cells. Quite clearly, while in the traditional approach the actions are strictly localized, they now become delocalized and may be distributed over quite extended areas of the brain" (Haken 1996: 11).

Table 2. Comparison between traditional and synergetic interpretations of brain functions (Haken 1996: 10)

TRADITIONAL	SYNERGETICS
Cell	Network of cells
Individual	Ensemble
Grandmother cell	Collective of cells
Steering cell	Collective of cells
Localized	Delocalized
Engram	Distributed information
Programmed computer	Self-organized
Algorithmic	Self-organized
Sequential	Parallel and sequential
Deterministic	Deterministic and chance events
Stable and static	Close to instability points

There is a great change in understanding and point of view. In traditional view, brain acts as a programmed computer based on algorithms, but in synergetics point of view brain acts by means of self – organization. If we think brain functions as management system of human being, we could make analogies between brain functions and management systems of society.

Domasio didn't use the concepts of synergetics. According to him brain and body are not two distinct entities. Brain is a part of the body and continuously interacts with the body (Domasio, 1999: 102). Decisions are made thorough the interactions of brain and the body. This approach resembles synergetics concept. Synergetic explanations of brain functions may shed light on search of governance.

2.3. Synergetic Dynamics of Complex Society

With the systematic point of view societies and settlement systems are very complicated systems, which have too many sub-systems, and each of them has their own sub-systems, and there are infinite levels of interactions, input –output & feedback relations between them. As a result, cities are open, dynamic, non-linear, and living systems at the infinite level of ***complexity*** (Tekeli, 1968; Forester, 1969; Chadwick, 1971; Steiss, 1974; Mass, 1974; Anderson, Batten & Nijkamp, 1984; Nijkamp & Reggiani, 1989, Dendrinos & Sonis 1990).

Societies reached high complexity levels and entered a process of strong interaction and rapid transformation. This situation means that dependent variables, structures, sub-systems etc. reached almost infinite complexity & heterogeneity, which causes "unpredictable futures" and "uncertain situations." "Uncertain situation" means that we could not see the cause and effect relations between events and this creates "***chaos situation.***"

There are some researces for adapting "synergetics" paradigm to the cities; especially Haken and Portugali are doing researches about the recognition maps of self-organizing patterns of cities. Portugali refers two claims that, one cities are self-organizing systems and as such to a large extent unpredictable and therefore unplannable. Two, that the perception of cities as chaotic and unpredictable entities is becoming more and more a basic sensation of life and urbanism on the verge of the 21st century (Portugali, 2000).

On the other hand, there are also some attempts for adapting chaos theory to the social theory. One of them is Alwin Toffler, he has tried to adapt Prigogine's "dissipative structures" and "waves of change" concepts to the explanations of "social changes and chaotic situations" (Toffler, 1996, 1997). But Toffler has not taken into consideration the "spatio-temporal and cultural accumulation dynamics of societies" when he defines the dynamic spheres of societies.

I've tried to look holistically, and I accept main living, non-linear and dynamic system is society. Therefore, I have tried to adapt these synergy and synergetics paradigm to the society. In post-modern societies which have huge complex structures there are infinite variations of individuals, families, groups, organizations … When this variance coincides with rapid changes, uncertainty, chaos and crises emerged. People can organize groups by themselves at different levels according to their similar interests, goals, problems, ..etc. This is an unpredictable power which we can call "***social synergy***". This seems like "social capital", but "social synergy" is greater and very complicated than "social capital", social synergy occurs between different groups, and different levels of society, and between different kinds of embedded interactions of people, groups, and organizations.

In order to fully comprehend the structure of dynamic, complex and rapid change of social systems integrating into today's global world, a simple and flexible framework will be useful. Therefore, I attempted to develop a model of "Synergetic Dynamics of Complex

Society" which have seven dynamic systems and each of them has three dynamic sub-systems. I assume each society has these dynamics from quarter to global level and through these dynamics interactions and relationships within and between societies could be explained. Butterfly effects of chaos theory could be explained also by this model (Fig.5.). When there is a change in one of these dynamics, it creates a wave of change first of all between the synergetic dynamics wheels of this society, and then it affects other levels of societies' synergetic dynamics wheels.

These dynamic wheels are as follows:

1. Technological dynamics wheel; All civilizations, societies and settlements have dynamic systems for energy, production and distribution of goods and services. These systems are apparently interconnected.
Power,
2. Sociological dynamics wheel; All civilizations, societies and settlements have dynamic systems for ecology of social institutions. In this system there are interrelated sub-systems which consist of individual, family and social institutions (education, health..etc.).

3. Information dynamics wheel; All civilizations, societies and settlements have dynamic systems for information source, information conductor and information receiver. Information dynamics are dominantly determined by technological level.

4. Ecological dynamics wheel; All civilizations, societies and settlements have dynamic systems for physical environment, biological environment and human beings. Ecological conditions may dramatically change according to time, geographical features and societies.

5. Power dynamics wheel; All civilizations, societies and settlements have dynamic systems for ideology, sharing authority, and mobility which differs from society to society.

6. Psychological dynamics wheel; All civilizations, societies and settlements have dynamic systems for subjectivity, personality and relationships.

7. Spatio-temporal and cultural accumulation dynamics wheel; All civilizations, societies and settlements have dynamic systems for built environment, culture and history which can be seen a symbolic systems. Spatio-temporal memory is a result of settlement and historical dynamics and the level of this memory indicates the accomplishment of civilization.

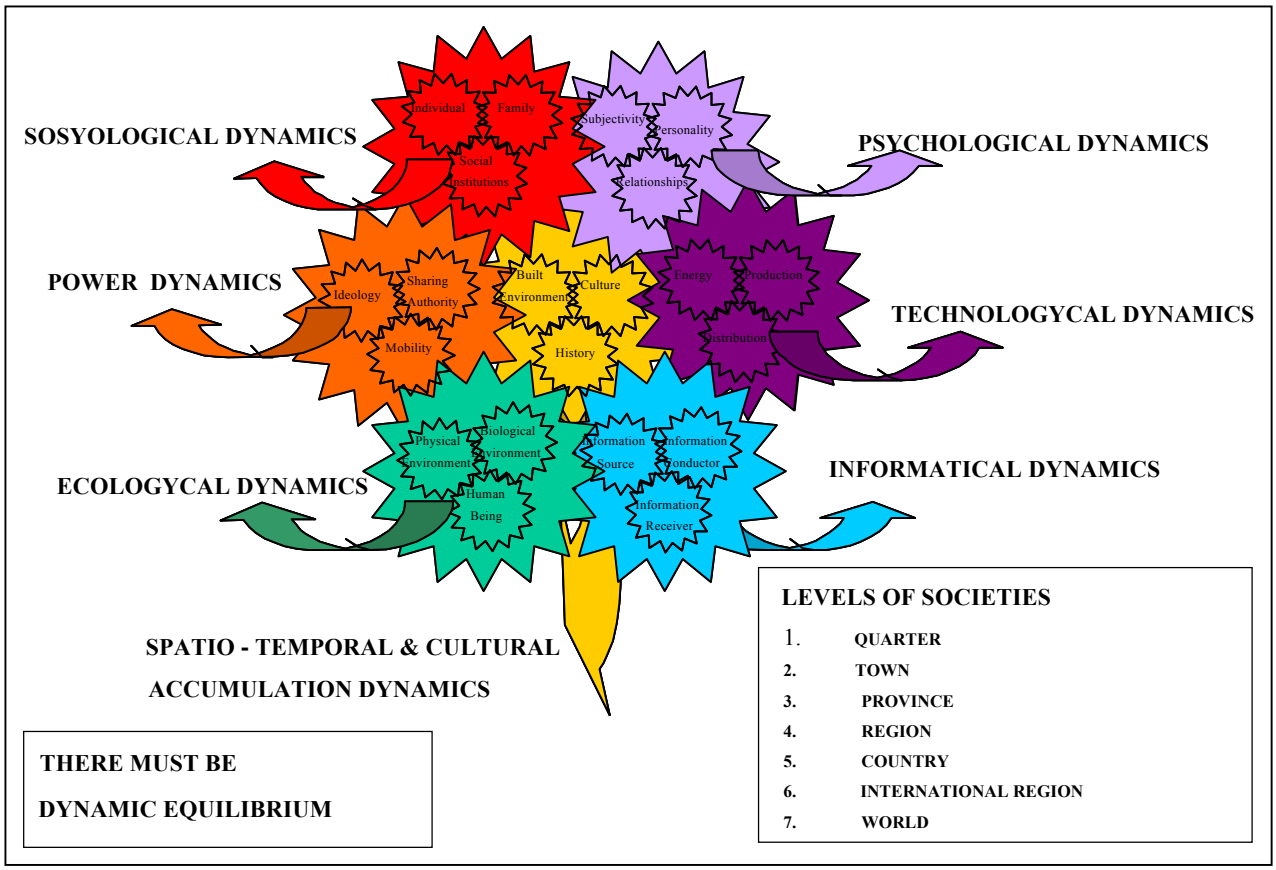

Fig.5. Synergetic Dynamics of Complex Society (Diker Camlibel, 2003: 99).

3. CHAOS AND SELF-ORGANIZATION PROCESS AFTER EARTHQUAKE

How could society self – organize and create synergy? Could planners join this self – organization process of society? And, could they orient this social synergy? For understanding and finding answers the research was undertaken during a significant case of chaos and self-organization process after earthquakes of August 17th and November 12th 1999 in the most developed industrial region of Turkey. The model of "Synergetic Dynamics of Complex Society" was tested with the process of self-organization of society after the chaos which had occurred with the earthquake as an uncertainty factor of physical environment in ecological dynamics wheel. We could see social synergy, which existed in self-organized communication – interaction channels between different dynamics and different levels of society. There could have been identified three loops of circulation in this self-organization process which were 1st "chaos", 2nd "social synergy development" and 3rd "passing through the new order".

1st Loop of Chaos; Sudden, non-linear and big waves of change had started with the interactions between dynamic wheels. First of all, it has affected the built environment in spatio-temporal and cultural accumulation dynamics wheel, and caused to very big demolish and people's die. Some of those people were the members of local governments, local branches of state organizations, social institutions, or workers in industries …etc. So people who were living in the settlements of earthquake region have lost neither their life nor friends and families. In this situation there were a really big "shock" and "sadness" then, alive possibility of them who were under the demolishes caused to "panic" for save and help in the

settlements of earthquake region, and the whole country. Communication and transportation had been cut to the region that caused to "worry and helplessness". The possibility of following earthquakes had caused to "fear". Too many people started to travel for helping with their stuffs (foods, clothes, dress, shoes, drugs…whatever they could found) had created "gangrene" because the roads have been stopped up and negative effects for health services and emergency helps. "Social synergy" has started to develop between people or groups who have same fear and aim like to search and save, to built temporary houses and to serve psychological and social needs. Unfortunately planners couldn't take any role, only the chambers of city planners have built temporary housing area like other NGO's. Social synergy could have behaved faster & more flexible than planners who have involved in public bureaucratic institutions.

2nd Loop of Social Synergy Development; In the 2nd loop of social synergy development, social synergy which had started to develop in the 1st circulation of chaos has started to grow within new communication and interaction channels between civil society, local government and state organizations in different levels of synergetic dynamics. In this period state had organized "regional government for emergency" for the earthquake region because local public institutions couldn't work. Beside the 1st circulation of chaos planners who were working in central planning institutions take some role in building housing areas and researches. There had been occurred great social synergy between public organizations and civil societies within all levels and dynamic wheels of complex societies and they have collaboratively built half temporary and permanent housing and service areas.

3rd Loop of Passing Through the New Social Order Dynamics; In this period people, different actors of Civil Society, Local Government and State organizations who have taken roles in self-organization process have started to sharing their experiences in earthquake chaos. This provides "social self-learning", and they have started to searches for new "social order"-new organizations and regulations. This loop is still continuous; society is trying to organize new models for "possible risks and uncertainties". Because of uncertain factors and chaos situations society has to self-organize for being ready for every possible conditions of future. Society must have very well organization, high level of adaptability or flexibility, rapid information flow and decision-making processes for being very dynamic. In this self-organization process planners must gain a role for new complex social order.

4. AS A CONCLUSION: SYNERGIC ADMINISTRATION MODEL

In the evolution processes, organisms develop a new and more complex communication system between cells, organs and systems of the organisms than they have before. According to complexity theory and synergetics paradigm the new and complex order is hinted on the new communication and interaction channels which were emerged in the self-organization processes started in the chaos situations. According to the experience of earthquake chaos and self-organization processes and the social synergy developments within new communication & interaction channels, and emerged collaborative actions between civil society, local government and state organizations, within different levels of synergetic dynamics of complex society and dynamic wheels. I have attempted to develop a new holistic model of "Synergic Administration" for the integrated governance from quarter to world level vertically, and integrated within the dynamic platforms, caucuses and councils of synergic administration horizontally in the same level. (Fig.6.)

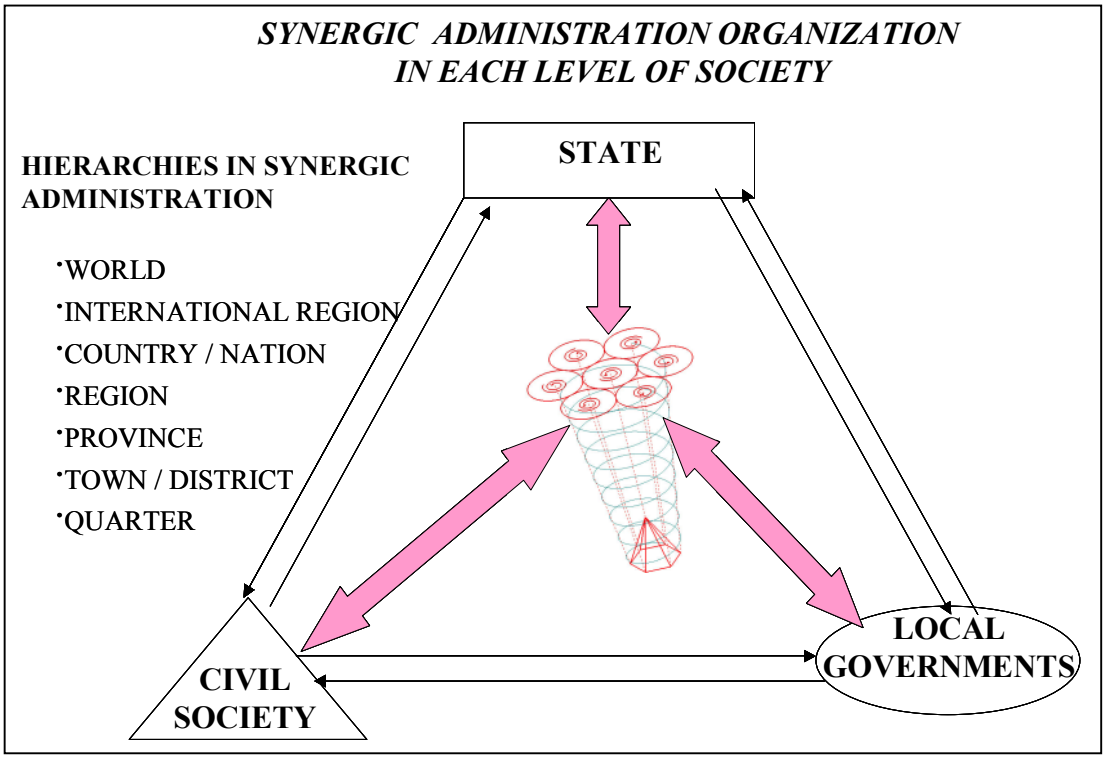

Fig.6. Synergic Administration which repeated each level of society and connected whit other levels of society (Diker Camlibel, 2003).

Thinking of communication & interaction channels that emerged after earthquake, it is to be remembered the intense cooperation and interaction between state and civil society organizations. But local governmental supports were inadequate. In order to sustain synergetic society local connections must be improved. This synergic administration which will take place on the focus of relationships should be self-organized within these three parts which are state, local governments and civil society.

This is a try for modeling self-organization process in administrative systems of society. There are some movements for changing administrative systems and developing governance which are in the frame of Local Agenda 21 and Regional Development Agencies. Supported by the International Union of Local Authorities (IULA), development of city councils, city general assemblies, working platforms, thematic caucuses and workshops, which are formed within the context of the United Nation's "Local Agenda 21" program are all indicators of this self – organization process.

There has to be a transformation in administrative structure towards "synergic administration", which has to provide basis for the creation of social synergy. And planners can define a role for themselves as "synergist" who could help society in creating synergy under necessary conditions and situations, and help them in orienting this social synergy.

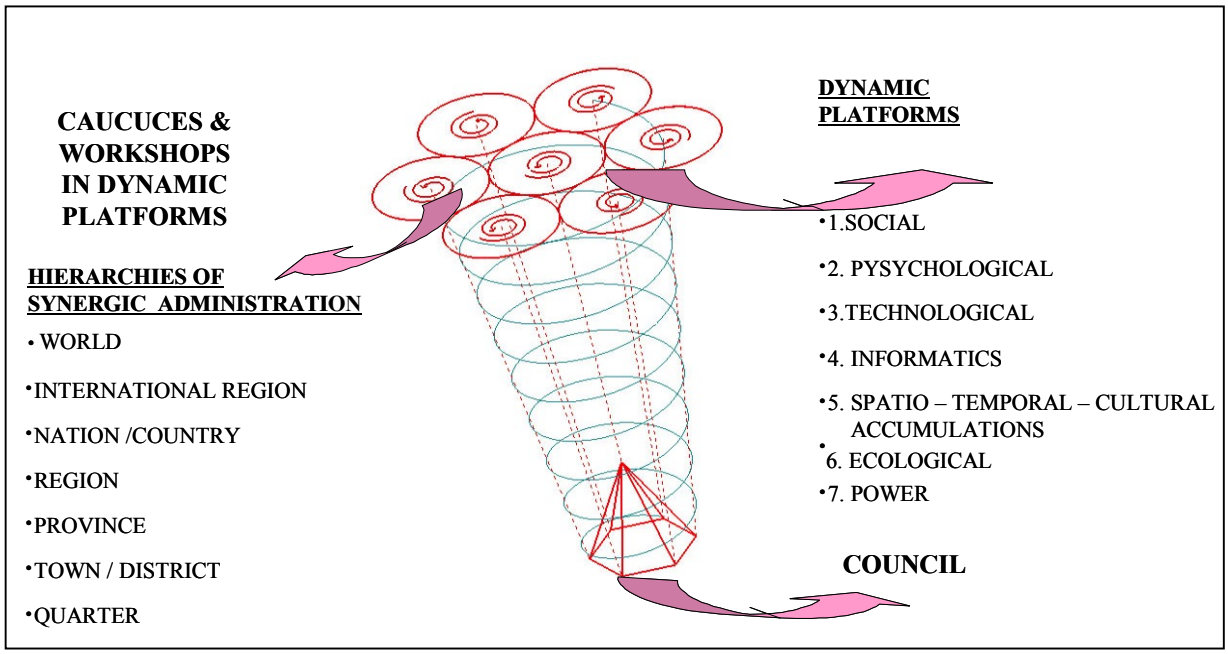

Fig.7. Dynamic Councils, Platforms and Caucuses of Synergic Administration (Diker Camlibel, 2003).

Each dynamic platform includes caucuses who can prepare action plans related with their dynamics and sub-dynamics and different special problems of their society. Dynamic platforms and caucuses contain interested represents from the organizations of state, local government and civil society of that society (Fig.7.). They come together and produce their own solutions for their own problems, and make plans and implement them together. Councils could coordinate platforms, and produce collaborative plans as Healey (1997) mentioned. In this model, there is a big flexibility, each caucus, dynamic platforms and councils can develop communication and interaction channels within the same dynamic platforms and councils of other societies' both in the same level and in different levels.

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