TOBB UNIVERSITY OF ECONOMICS AND TECHNOLOGY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

ARCHITECTURE ON THE AXIS OF COMPLEXITY: AN APPROACH THROUGH THE CHAOS THEORY

MASTER OF ARCHITECTURE

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Approval of the Graduate School of Natural and Applied Sciences

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Çiğdem AYTEKİN

ABSTRACT

Master of Architecture

ARCHITECTURE ON THE AXIS OF COMPLEXITY:

AN APPROACH THROUGH THE CHAOS THEORY

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Due to the desire of humankind by means of conceiving the complex universe we live in, many theories have appeared in the history. Even though the Chaos theory has been used in human sciences at first, it actually gives us hope concerning the future use in social sciences that include architecture and sociology in terms of breakthroughs. In this context, the theory, which analyses the nonlinear complex systems, can now be seen as a tool to investigate the current situation of architecture. According to the philosophy of the theory, every event and phenomenon in the universe cannot be considered independently. Therefore, today, it seems inevitable to look at metropolitan city and sociology in order to be able to examine current architecture.

Today, in the frame of the transformation of the city and the social dynamics that lead to this transformation, it can be said that there is a congestion and repetition in the context of the city/citizen/architecture. Metropolitan cities can now be assumed as the most complex scene of architectural experience in the frame of nonlinear

natural atmosphere and linear orders created by society. It is possible to examine the spatial consequences of the social transformations that modern individuals experience, but only by comprehending the importance of the strong relationship between the metropolitan city and the architect.

Through the Chaos Theory, this paper will discuss the views of the today's individual on the line of complexity in daily life and the role of today's architect on the edge of chaos. In other words, this research focuses on which attitude of today's architect can be an intervention tool to initiate the transformation of city/society.

Keywords: Chaos theory, Architect, Complexity, Order, Metropolitan city

ÖZET

Yüksek Lisans Tezi

KARMAŞIKLIK DİZGESİNDE MİMARLIK;

KAOS TEORİSİ ARACILIĞIYLA BİR YAKLAŞIM

Çiğdem AYTEKİN

TOBB Ekonomi ve Teknoloji Üniversitesi
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İçinde bulunduğumuz karmaşık dünyayı anlamlandırabilmek için tarihte bir çok teori ortaya atılmıştır. İlk başta beşeri bilimlerde kendini tanımlayan Kaos teorisi, bugün, mimarlığı ve sosyolojiyi kapsayan sosyal bilimlerde de büyük ilerlemeler kaydedilebileceği konusunda bize umut vermektedir. Bu bağlamda, lineer olmayan sistemleri inceleyen teori, güncel mimarlığı okumanın bir aracı olarak görülebilir. Teorinin kelebek etkisi felsefesine göre, evrendeki hiç bir olay ve olgu bağımsız olarak düşünülemez. Dolayısıyla, bugün, güncel mimarlığı inceleyebilmek için metropol kente ve sosyolojiye bakmak kaçınılmaz görülmektedir.

Metropoller, artık doğrusal olmayan doğal ortam ve toplum tarafından yaratılmış doğrusal düzen çerçevesinde, mimari deneyimin en karmaşık sahnesi olarak kabul edilebilir. Bugün, kentin dönüşümü ve bu dönüşümün yol açtığı toplumsal dinamikler çerçevesinde mimar/mimarlık/mekan bağlamında bir tıkanıklık ve tekrarın olduğu söylenebilir. Modern bireylerin yaşadıkları toplumsal dönüşümlerin

mekânsal sonuçlarını incelemek, ancak metropol kent ile mimar arasındaki güçlü ilişkinin önemini kavrayarak mümkündür.

Mimarlık üretimi ve bugünün mimarının düzen/düzensizlik karşısında edindiği bakma biçimlerinin arasında doğrudan bir ilişki vardır. Kaos Teorisi aracılığıyla, bu çalışma, bugünün bireyinin gündelik yaşamın karmaşıklık dizgesindeki bakma biçimleri ve bugünün mimarının bu dizgedeki yeri ve rolü üzerine tartışacaktır. Diğer bir deyişle, bu tez, bugünün mimarının hangi tutumunun, kentin/mimarlığın dönüşümünü başlatacak müdahale aracı olabileceği üzerine odaklanmaktadır.

Anahtar kelimeler: Kaos teorisi, Mimar, Karmaşıklık, Düzen, Metropol kent

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1. INTRODUCTION

The universe is a complex system with, changing characteristics in terms of its density in our daily lives. Due to the desire of humankind to understand the unknown, many theories have appeared throughout history. The last quarter of the 20th century is an era in, which significant scientific developments occurred. The hypothesis of chaos, which has existed since the ancient times, became particularly popular in this era. Although the theory first appeared in human sciences, it currently seeks to give clarity concerning the future of social sciences. The mathematical model of chaos theory provides insight for physics; in addition, more recently academics argue that this theory may also support many sciences that include architecture and sociology in terms of breakthroughs.

When the studies about chaos are put together, it is known that different characteristics of chaos are used to explain chaos. Aside from mathematicians and physicists, this problem becomes even more pronounced in the works of scientists in an effort to answer questions such as what chaos will do in sociology and how it will be implemented (Smith 1997). According to Gleick; the social sciences, which embrace theoretical principles of the theory, may have the chance of abandoning the mechanical perception and seeing the world from a wider perspective. Chaos has become not just a theory but also a method, not just a belief but also a way of doing science (Gleick 1987).

Pulselli thinks that the dynamics of social systems and interactions with the urban environment have become more complex and new information is required to understand their evolution: “People interact in cities. Despite stationary urban infrastructures and built environments, their changeable relations, intensities and locations generate complex behaviors. Evolving trends, unexpected events and dynamic patterns, fluxes flowing through and within city boundaries, call for new approaches to urban and regional studies.” (R.M. Pulselli 2011). Therefore, after

analyzing the present situation very well with detailed analyzes and identifying its problems and trends together with cause-effect relations; the 'rationalist, comprehensive planning' mentality based on the concept of predicting and determining the future has been questioned by many scientists in many ways.

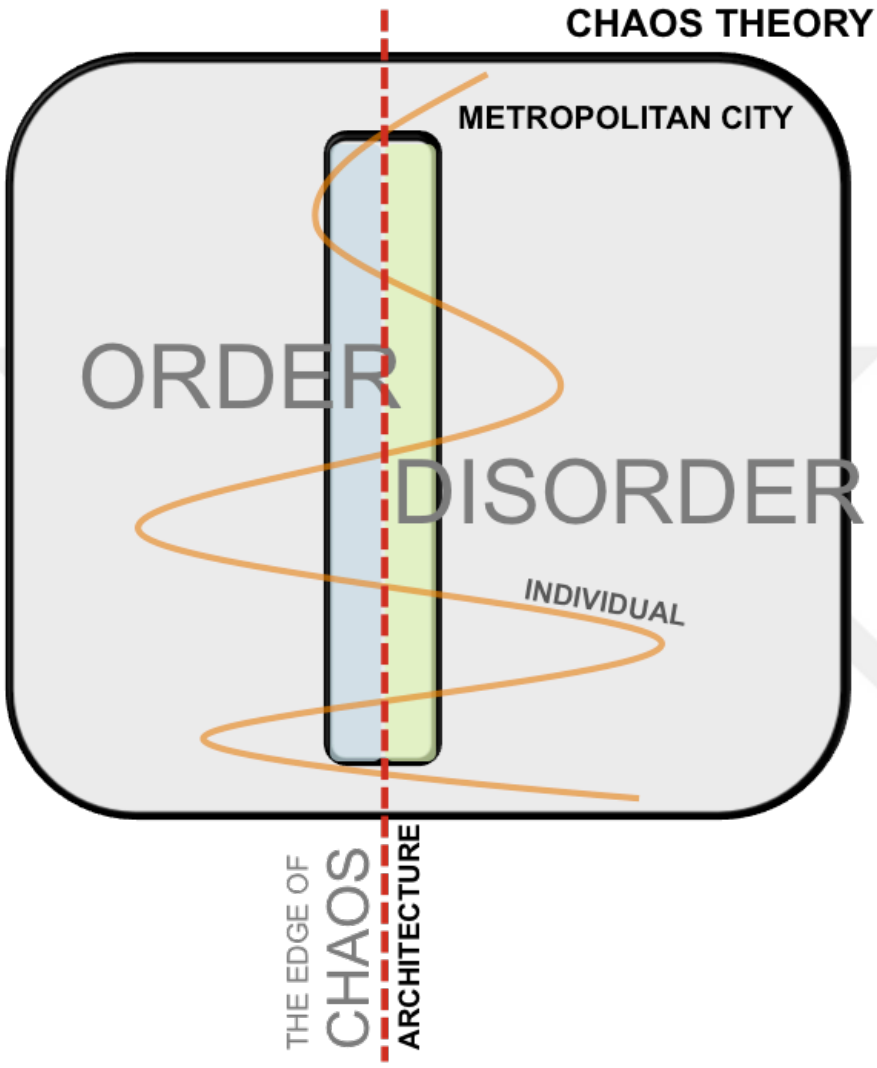


Figure 1.1. : The diagram of the research

"*Undoubtedly, architecture has always been an urban phenomenon for almost all periods. When it comes to doing the space / building production work with a specialist, this is mainly in the city and it is still happening.*" (Tanyeli 2017, 72) As Tanyeli argues, today's architecture can make itself legitimate, and in this context, a questioning of today's architectural production will find answers on the urban level. Hence the entire context of the research is shown in Figure 1.1.

Today, according to philosophy of the theory, it can be said that most of the disciplines cannot be separately examined without each other. At this point, the metropolitan city occurs as a totalitarian field where architecture and sociology come together. In this respect, the philosophy of the theory may be regarded as an instrument, which is used in order to comprehend dynamics and complexity of systems, and the metropolitan city shows itself as the most obvious architectural the platform where chaotic relations can be observed in daily life.

It can be said that the great social changes experienced in the historical process produced serious urban consequences. The greatest of these consequences is, of course, seen in metropolitan cities, which are regarded as the birthplace of change and alienation, with their own problems and complexities. The changing technology, the living conditions, the transformation of the living space and the change of everyday life practices, the metropolitan city is undergoing a transformation. Today's metropolis can be said to be a complex identity because it is exposed to intense migration in the context of capitalism, consumer culture, economic and political factors. Şenel explains that the city cannot think independently from the complexity:

“Like every living system, when the city starts to live, there is a complex environment. The city includes the differentiation, what are happening, the unpredictable future, the imbalance and the schemes together.

For this reason, irregularities within the order over time increase the complexity of these irregularities by creating new arrangements, layering. And it is taking the name of the metropolis, which is the most clear and complex settlement today (Şenel 2002).

In other words, the situation in the metropolis describes a dynamic, self-renewing, renewal-transforming entity that cannot be fitted to a system. This organism is formed by the overlapping of different layers, sometimes by combining these layers and creating a completely new layer, and sometimes by removing a layer completely from the center.

In daily life, it can be said that in this organism, society is the most important actor who performs the continuity and movement. The individual who experiences the metropolis, shapes the metropolis with his experiences, and changes the city with the

demand of his constantly changing needs, has a very important potential in defining the metropolis. Therefore, the city, which is an open and lively system, is in constant communication with the citizen. Therefore, the metropolitan city is open to diversity, change, evolution, communication and innovation. In this sense, it seems possible to analyze the complex and stratified structure of the metropolitan city within the scope of new factors and point of views. In this context, it is possible to detect the main dynamics of urban change. It is also foreseen to obtain some findings about how urban change generates the metropolitan city.

In this context, today, social systems and cities have reached very high levels of complexity and, on the other hand, have entered a very rapid process of interaction and change. According to Diker; it is impossible to predict that the interdependent variables, structures and subsystems will reach infinite variety in this process and a "uncertainty environment" is formed. The "uncertainty environment" causes a "chaos situation", which means that we cannot see or distinguish causal relationships between events (Diker ve Ökten 2009).

"Cities, like nowhere else, present a series of seemingly insoluble problems. Periodically, they seem to be 'in crisis'. The problems take many forms: as ever more people live in the world's cities, services fail to provide for their basic needs; as poverty deepens, people adopt survival strategies that others consider illegal or immoral; as tensions within cities rise, people take to the streets to protest. We could go on, and on. Alternatively, cities can be seen as the crisis. As they sprawl across the face of the earth, cities are disordering the environment through their consumption of raw materials or through deadly, uncontainable emissions. As stock exchanges crash, bounce and crash again, people are thrown out of work in places seemingly untouched by urban financial markets, and sometimes even the world is plunged into unexpected recession. Cities, then, seem to be genuinely unruly, and they appear to be growing uncontrollably, exacerbating already seemingly unmanageable social tensions." (Pile, Brook ve Mooney 2005)

Metropolitan chaoticism and obscurity inflicts feelings of isolation, loneliness, lack of communication, worthlessness, void and hopelessness in a sociological context to a segment of society. And the individual goes through a state of mental deterioration that does not have a sense of continuity, feeling or obligation, and denies all of his

social ties. The *"idle*" attitude that Chaos brings on the individual represents the loss of spiritual collapse and individual rules in the sociological context of loosening the bonds with the society in which he lived and gradually disappearing. In the scope of this study, this incoherent identity that isolates itself from the society under the domination of chaos and cannot reach a personal production mode and produce new ones will be tried to be expressed within sociological scope.

According to Pile, Brook and Mooney: “Despite their vastness and their perpetual flux, it is possible to see certain persistent regularities in urban social relationships. Cities are not entirely random assemblages of things and people (even if it sometimes feels like this!)”. According to Simmel, moments and difficulties facing the individual in daily life are directly intervening in the mental life and they make it necessary to establish his own protection mechanism (Simmel 1950). Parallel to this view, Deleuze and Guattari's "What is Philosophy?" the last part of his book begins with the words: “We require just a little order to protect us from chaos.” (Deleuze ve Guattari 1991, 200).

Bauman describes the concept of order as follows: “’Order', let me explain, means monotony, regularity, repetitiveness and predictability; we call a setting 'orderly' if and only if some events are considerably more likely to happen in it than their alternatives, while some other events are highly unlikely to occur or are altogether out of the question. This means by the same token that someone somewhere (a personal or impersonal Supreme Being) must interfere with the probabilities, manipulate them and load the dice, seeing to it that events do not occur at random.” (Bauman 2000, 55).

In this context, fear of metropolitan chaos / uncertainty causes individuals who want to be self-reliant to break out of the metropolis and form their own schemes. In other words, the society needs some beliefs and assumptions in order to constitute the order and maintain its existence. It can be said that these beliefs, traditions and values penetrate to the cultural, spatial and social layers of metropolitan cities. These phenomena normalize and standardize the members of the city in daily life content by constituting common order. These manners, which make the habits of the society ordinary, are defined as DOXA in sociology. Doxa in the sociology of Bourdieu

appears as the combination of all dominations which impact the daily life of citizens and rules it in the social life (Bourdieu 1982).

Doxa, which occurs as a cornerstone on the relation of domination and city, affects individuals in daily life. In other words, the discussion of the relationship between sociologic structure/citizen and metropolitan city is the discussion of daily life and Doxa, which is produced by that daily life. In this concept, the Chaos creating the intensity of city and Doxa composing the order of society cannot be considered without each other.

Because the social world is a world constantly imposing its own requirements through the "schemes of ready action and perception", individuals can never watch the actions, thoughts and words from a distance (Bourdieu, 1980). Moreover, since the forms of association with the social world are realized through social practices (work, school, etc.), it can be said that there is no opportunity to rethink this world at the level of discourse and consciousness. At this point, it can be said that there is not much chance of people to distinguish themselves from the society, such as creativity, innovation, grasping the critical view. Because it does not know how to disclose or develop the means of reproducing dominance, relations and inequality in the social world. As Bauman points out, the order that the society creates in the daily life line is directly reflected in the urban space and causes a blockage and a recurrence in the metropolitan city and its urban profile:

"In an artificially conceived environment, calculated to secure anonymity and functional specialization of space, city dwellers faced an almost insoluble identity problem. The faceless monotony and clinical purity of the artificially construed space deprived them of the opportunity for meaning-negotiating and thus of the know-how needed to come to grips with that problem and to resolve it." (Bauman, 1998, p. 46).

In this context, the metropolitan city can be seen as a stratified structure that contains all the stages of complexity from the chaotic atmosphere of nature to the order in that society creates. On this line of complexity, the individual of today positions himself / herself according to many social, economic, political, cultural, religious, and other parameters. The relationship established with the city represents a moment of encounter; this moment appears as a living reality and is a layered and a reflective

representation that replaces each other in the relation of the city and citizen, not as the attitude of an observer who is distant from the city (Aydınlı 2012). Hence, as Aydınlı states, individual faces with the all stages of complexity in his/her daily life.

Georg Simmel expresses the mental state of today's individual with the Blasé concept, which he unveiled in the Metropolis and Mental Life (Simmel 1950). Blasé attitude can be summarized as a kind of glare or insensitivity that the urban person has developed against the chaotic life of the metropolis.

Nowadays, this situation can be considered to be especially valid for architectural criticism and production. Therefore, it can be argued that architecture has also a blasé attitude towards consumption (Gegeoğlu ve Aydınlı 2014). As Bauman emphasizes, in the frame of the transformation of the city and the socio-cultural and socio-psychological dynamics that lead to this transformation, it can be said that there is a congestion and repetition in the axis of the city/citizen/architecture. The problem of "identity" created on individuals and groups in everyday life with globalization has been and will be influential in the forming of the metropolitan scene. In this context, it is possible to identify the troubles of today's urban space only by comprehending the importance of the strong relationship between space and identity of today's architect (Bauman 1998).

"Architectural discourses often seem helpless in the face of the qualities of contemporary metropolis which paralyze the architect." (Tanyeli 2013, 405)

In today's complex city/society axis, production of architecture exhibits its own reality in various forms; there are many studies on the role of architecture in this context and the question of its role. A form of looking at the chaotic structure of the city can be described as a search for questioning the place, effect and role of the production of architecture in this context.

According to Gegeoğlu and Aydınlı; architecture is no longer in a system that only produces spaces for consumption, and every kind of concept that emerges from the consumer society plays an active role in the production of architecture. In other words, architecture can be transformed into an intermediary that serves as an end-product of concepts and identities generated from within (Gegeoğlu ve Aydınlı 2014). The group that will enlighten the mental structure of society with its products

is a group that actually embraces art, architecture, philosophy, sociology and creative thinking. An architectural language is a form of narration and communication.

“Architecture is like writing history and writing - a record of the people who produced it- and it can be read in the same way. Architecture is a non-verbal form of communication; the cult that produces it is a silent record.” (Roth 2002, 23). Architecture is a symbolic period of a social process. The social structure seems to be a determining factor in the formation of the architect. Because architecture is an area of action that is directly linked to the social structure of society, its economic and technological possibilities and its value judgments. Today’s architect has a role in the mental and physical tools of the city's formal structure. This role is evolving within the framework of the attitude and potential of the architect in today's metropolitan cities, in the face of complex problems.

At this point, today's architect, like every individual, defines his/her existence between the chaos and the doxa. On the complexity line of the city, the position of today's architect and the way of looking at the city are strongly related to the design process and creativity. So, this research focuses on which attitude of today’s architect can be the intervention tools to initiate the transformation of city/society and himself. As a result, within the scope of the study, The answer of the question is searched: ‘In what range can an architect be able to develop subjectivities that will’ voluntarily refute his sociality, question his whole social past and refresh himself even in the fastest flowing moments of everyday life, instead of the individual who is condemned to perceive the progress of the social world?’

To further explain these aforementioned concepts, a layered reading of the metropolises shall be provided using the Chaos Theory, and the chaotic order, dynamism and transformation of the cities. The objective is to discuss and assess the effects created by the association of Chaos and Doxa on a city and its layers. So this research is a quest for introducing new perspectives to contemporary architecture by scrutinizing the transformations of metropolises within the historical process and their condition today using theory. This way it might be possible to create a new view and platform for discussion that could be created in service of contemporary architecture making use of different disciplines.

2. CHAOS THEORY

"Before everything, there was chaos."- Hesiod (Hesiod 2006)

Chaos (Khaos) is a Greek word and is thought to have first appeared in "Theogony" meaning "The Birth of the Gods" by Hesiod in sources dealing with Ancient Greek philosophy (Hesiod, 2006). However, findings in respect of the Chaos Theory had not been systematized until the last quarter of the 20th century and also it had not been qualified as a "theory" by the world of science during that time period. It was in the 1970s that the doctrine was systematized and resumed its name. The doctrine gained momentum especially after this period and steered the mankind to question all of the previous knowledge, prejudice and attitudes and brought mankind to the threshold of a new era. The theory offers a totalitarian way of seeing as shown in the Figure 2.1.

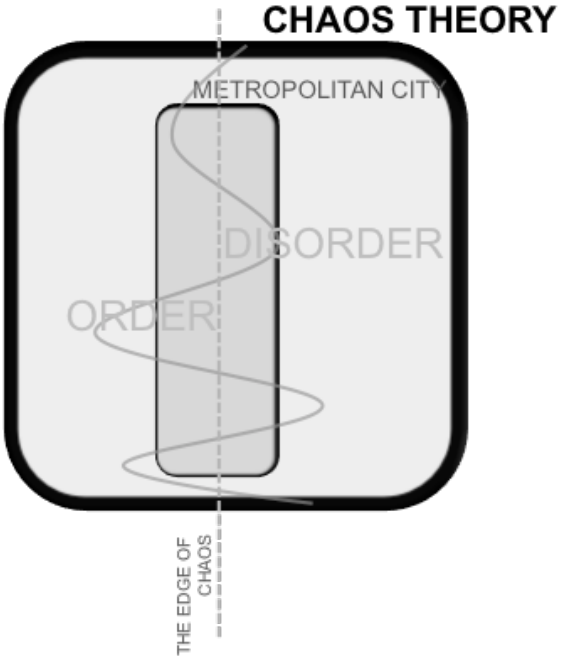


Figure 2.1. : The diagram of the Chaos theory

The rationalist line of thought that studied the existing situation in detailed analysis and arrived at a cause and effect relation in the end had come to be challenged with this new period. During the last 40 years and along with thousands of scientific publications, it has been observed that this theory caused significant changes in many disciplines from ecology to engineering and from economy to sociology.

It could be said that we are no strangers to the Chaos Theory, which is popularly referred to as "the butterfly effect" in our day-to-day lives. The theory alleging that small changes in the world could lead to large differences and could trigger other changes of varying magnitudes claims that everything in the universe is connected to everything else and even the smallest of an action affects the whole of the universe. It could be presumed that the universe moves in an order from the smallest to the largest part according to this theory. The essence of the theory is that small changes such as in day-to-day life appear in different forms and different magnitudes after a series of chain reactions or become one of the causes behind it.

The concept of Chaos in the daily jargon and its scientific use are different from each other. This distinction has still not been determined to this day The understanding that considers Chaos as negative and order as positive had not been limited to rhetoric, ideology or religion. Science also adopted the same understanding in the historic process until the chaos theory was established. Chaos is defined as disorder with a negative connotation in the daily language; however, it bears the meaning of "the order within disorder" in scientific terms today. (J.Bird 2003)

The disorder underlined by Chaos does not consist of a simple complication or disarray. In order to get a grip on complexity, we first need to distinguish between "complicated" and "complex". Complicated can be reduced however "complex" cannot be simplified. A complex system cannot be simplified by disconnecting the individual pieces. A complex system can only be understood by scrutinizing the holynymic / meronymic relations. As scientist Stephen Wolfram put it:

"Whenever you look at very complicated systems in physics or in biology, you generally find that the basic components and the basic laws are quite simple; the complexity arises because you have a great many of these simple components interacting simultaneously. The complexity is actually in the organization – the myriad possible ways that the components can interact." (Waldrop 1992, 86)

In the past, scientists generally avoided investigating complex systems. Contrary to the Newton science, which sees the world as a machine with regular, predictable and certain justice, the theory takes irregularity, unpredictability and uncertainty into consideration and acts as a bridge between the simplification of Newton science and randomness of quantum physics (Gleick 1987). In addition, the theory brings harmony and togetherness, not contradiction between order and disorder. It is important to note this as a spectacular distinction, which will further be discussed below and is likely to be confronted while comprehending the city entirely.

James Gleick, in his masterpiece, claims that the classic mathematical vision of chaos is inadequate. According to him; *"Chaos is such a set of ideas that all these scientists feel like a shareholder of a company that shares a common capital with them. Whether a physicist, a biologist or a mathematician All of them thought that complexity would come from simple and deterministic systems and that systems that were too complex in the eyes of classical mathematics were actually subject to simple laws. They also believed that whatever their area of expertise, they understood the essence of the complexity of their main task."* (Gleick 1987)

As stated above, the science of chaos investigates non-linear dynamic systems. In physics, linear equations used for the time-varying model of a data in nonlinear systems could explain simple changes. However, it was inadequate in explaining the complex motions of two or more independent components. In linear systems, the summation of all pieces in the system is equal to the entire system. On the contrary, it is not the case for non-linear systems. In non-linear systems, the summation of all pieces is always less than the entire system (Figure 2.2.).

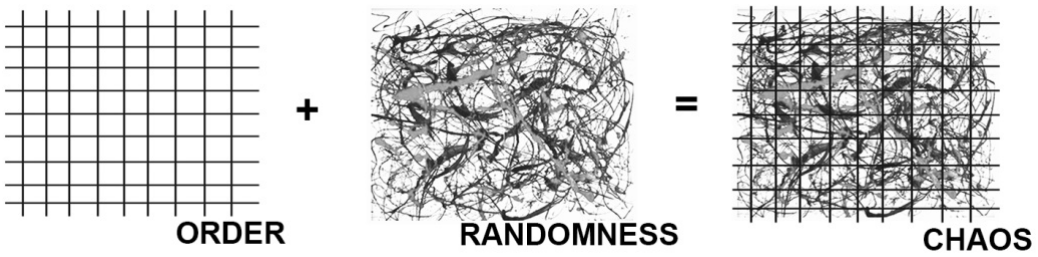


Figure 2.2. : Linear and nonlinear systems

According to theorists, complex systems discovered by Chaos include many concepts such as irregularity, precise commitment to initial conditions,

incompleteness, uncertainty, unpredictability, non-linear relations, and self-organization. In theory, a creative process of irregular behavior is mentioned, which sometimes produces a stable and complete, sometimes unstable, incomplete complexity (Gleick 1987). The characteristics of non-linear chaotic systems can be summarized as follows:

- Deterministic.
- Non-linear.
- Sensitive dependent on initial conditions.
- Non-predictable.
- Not irregular and random.
- Self-organized (Gleick 1987).

Because of the fact that it seems possible to analyze and evaluate the dynamic cases in terms of cause and effect relations through the theory, the mathematical features of the theory became an inspirational source for several researches of social sciences.

It is useful to expand on the dynamic systems that are to be used in the analysis of sociological problems: "Interactions with positive feedback are very *sensitive to their initial conditions*: a change in that condition may be so small that it is intrinsically undetectable, yet result in a drastically altered outcome. This is called the *butterfly effect* after the observation that, because of the non-linearity of the system of equations governing the weather, the flapping of the wings of a butterfly in Tokyo may cause a hurricane in New York." (Heylighen 2009). Sensitive dependence on initial conditions defends that understanding the universe is only possible by breaking classical deterministic approaches. Many nonlinear dynamic systems are kept separate from other ideal, linear, and predictable systems because they give very different responses to small changes in the initial states. While linear systems respond to the effects linearly, it is hard to know all the data, which affects non-linear systems, therefore the behaviors, which dynamic systems generate on the long view, cannot be predicted.

"The way the universe proceeds both by continuous development and sudden jumps." – Charles Jencks (Jencks 1995, 88)

"Now that science is looking, chaos seems to be everywhere. A rising column of cigarette smoke breaks into wild swirls. A flag snaps back and forth in the wind. A dripping faucet goes from a steady pattern to a random one. Chaos appears in the behavior of the weather, the behavior of an airplane in flight, the behavior of cars clustering on an expressway, the behavior of oil flowing in underground pipes. No matter what the medium, the behavior obeys the same newly discovered laws. That realization has begun to change the way business executives make decisions about insurance, the way astronomers look at the solar system, the way political theorists talk about the stresses leading to armed conflict." (Gleick 1987, 5).

Nonlinear complex systems, which have a wavy structure, oscillate between order and disorder. "Self-organization is a process where some form of overall order or coordination arises out of the local interactions between smaller component parts of an initially disordered system." On the basis of a simple example drawn from nature, Popper further elaborated his thoughts on the cloud metaphor:

"*As a typical and interesting example of a cloud I shall make some use here of a cloud or cluster of small flies and gnats. In this case of the gnats, their keeping together can be easily explained if we assume that, although they fly quite irregularly in all directions, those that find that they are getting away from the crowd turn back towards that part which is densest. This assumption explains how the cluster keeps together even though it has no leader, and no structure – only a random statistical distribution resulting from the fact that each gnat does exactly what he likes, in a awless or random manner, together with the fact that he does not like to stray too far from his comrades. Like many physical, biological, and social systems, the cluster of gnats may be described as a 'whole.' Yet the cluster of gnats is an example of a whole that is indeed nothing but the sum of its parts; for not only is it completely described by describing the movements of all individual gnats, but the movement of the whole is, in this case, precisely the (vectoral) sum of the movements of its constituent members, divided by the number of members."* (Popper 1972, 208-210).

Despite the fact that Karl Popper mentions a random order in the example of cluster of gnats; indeed, gnats fly irregularly in the direction they want. They do not have any leader or organism keeping them together. Nevertheless, they will never fall into conflict and act together. Here, it appears that they form a self-organizing and

complex system in which multiple interactions take place between parts of decentralized systems (Vrachliotis 2008).

“Self organized systems are unbalanced. The edge of chaos is really a process, not a static thing like a building; a time-developing quality, not, as architecture is, 'frozen music'. in the gap between the two determinisms (chance and necessity), the two most important things in the universe emerge: life and mind. In this space, self-organizing systems such as the limit of chaos are formed” (Jencks 1995, 88). In these kinds of systems, the change is in the scope of integrity and it does not happen randomly. These systems have independent and flexible structures. Although they should be independent for accommodation, they do not need any intervention for self-organization. Or to put it in Capra's words: "self-organization is the spontaneous emergence of new structures and new forms of behavior in open systems far from equilibrium, characterized by internal feedback loops and described mathematically by non-linear equations." (Capra 1997, 85).

The chaotic systems present a geometry called fractals under the mathematical models. Self-similarity is the main shape feature of fractals. In other words, every different single group is similar to total form when several scales are examined. The pieces of the geometry are always comprised of the components, which are similar with the whole but not the same with each other. In other words, the piece is a kind of the whole system and the whole system is in every part of the system. At this point, fractals do not occur as the reduced and simplificated images that classical mathematics accepts in Euclidean geometry, furthermore, they present the real shapes of components.

“The irregular and fragmented spatial texture that nature possesses has difficulty in explaining classical geometry. Mandelbrot, a mathematician who first set the geometric building blocks of the theory, focused on the principles of organization by describing fractal geometry as its own geometry. The word came to stand for a way of describing, calculating, and thinking about shapes that are irregular and fragmented, jagged and broken-up shapes from the crystalline curves of snowflakes to the discontinuous dusts of galaxies” (Gleick 1987). In other words, As Alexander claims; the formation of the universe may be of such a nature; the ore that makes up the human self and things may be much more intertwined than we do not understand (Alexander 1979).

3. METROPOLITAN CITY AS AN ENVIRONMENT OF COMPLEXITY

3.1. From City To Metropolitan City

City is the environment that dynamicity and complexity can be intensively observed in our daily lives. City involves characteristics such as change, transformation and dynamicity that chaotic systems include. In 'History of the City', Mumford states that finding the acceleration that one needs to advance to the future in a brave manner is not possible without investigating the progress in history that a city passes through (Mumford 1961).

Figure 3.1. : The diagram of the metropolitan city

"In seeking the origins of the city, one may too easily be tempted to look only for its physical remains. But as with the picture of early man, when we center on his bones and shards, his tools and weapons, we do less than justice to inventions like language and ritual that have left few, if any, material traces." (Mumford 1961, 5). Even the etymological origins of the word of the city emphasize the coexistence of these relations (Figure 3.1.).

In the work of Saint Isidore, Etimolojiler, the word 'city' goes on to various sources. One of these sources is the ‘urbs’, which means the city's stone structure. This structure of the city was established for practical reasons such as protection, trade and war. The other root of City is ‘civitas’ and means emotions, rituals and beliefs that form in the city (Sennett 1990).

Examining the historical process of cities is required so that the physical and spatial structure of them could be understood. Because cities are productions of progress, they are the units which discover themselves consistently on vertical and horizontal layers. According to Mumford, if we see that the partial conception of the nature of history and the drama within a period of more than five thousand years, it may take more time to consume the city's untapped potentials (Mumford 1961).

Before the 20th century, urban discussions had merely been made by considering physical features. With the advances in industry, the economic, social and functional features had also been included in the discussions. Nowadays, these discussions not only involve physical features, but also social fields. Hence, beyond the spatial structure, the city is a complicated structure, which should be considered with its economy, culture, history, policy and social relationships. Urbanization is a period of population accumulation that creates division of labor and specialization in the structure of society which enables the increase of the number of cities and the emergence of cities today, parallel to industrialization and economic development (Keleş, 2002).

“Modernity means to start to think that the city has a form. Rather, first, it is to realize that the city has not always been like this, that the change has become what it is today. It means seeing you live in a constantly changing world…” (Tanyeli 2013, 390).

Even at the beginning of recorded history, cities had already reached their maturity periods, and until industrialization, they had seen little change in terms of their functionality and physicality. The sociopolitical changes which stem from development of science, technology, media and rapid increase in population make city structures and daily life more complex, dynamic and intense. The potential of change and dynamism that cities have is obviously observable in historical progress and daily life. The growth of the city is a sign of institutionalization, and the 'metropolis' describes this growth under a global heading.

3.2. Stratified Structure Of Metropolitan City

Thinking that the meaning of a city is derived not only from the functions of that city but also from the structural form of the relations between the main elements that make up it, Krampen points out that the center of the city is loaded with meaning as the basic space of human encounters and interactions (Krampen 1979)**.** People are at the heart of the daily life, which is generated, and feds by the metropolitan cities. It must be remembered that the modern metropolitan city explains the meaning of its dynamic relationships.

Metropolis in the Ancient World meant a major city at the highest level in terms of politics, culture and economy that had certain powers over the other cities and rural areas. In today's world the word metropolis has wider meanings under the category of "big cities". Metropolis is a product of agglomeration. Once the level of interaction had reached its highest point in the historical process between cities and continents, nowadays, along with urbanization, distances have come to be determined in time rather than space with the population and the increase in density and the development in mass media communication. Trade and shipping routes were accelerated, and the metropolises that were highly developed established a vast dominance over the whole of the world. The area of metropolis exceeds its physicality and extends beyond its own locality and its own country. The metropolis can undertake central missions at the international level for its country in terms of economic, political and social aspects and can become an intersection point by influencing other cities.

In fact, metropolitan city has more meaning than population, spaces (streets, squares, structures, monuments…), public utilities (electric lights, undergrounds, infrastructures…). It is not enough to define metropolitan city through one of these components today. In order to reach the origins of the city we must, supplement the work of the archaeologist who seeks to find the deepest layer in which he can recognize a shadowy ground plan that indicates urban order (Mumford 1961, 5). City cannot be reduced to any single feature.

" The city is a whirlpool." (Corbusier 1999, 70)

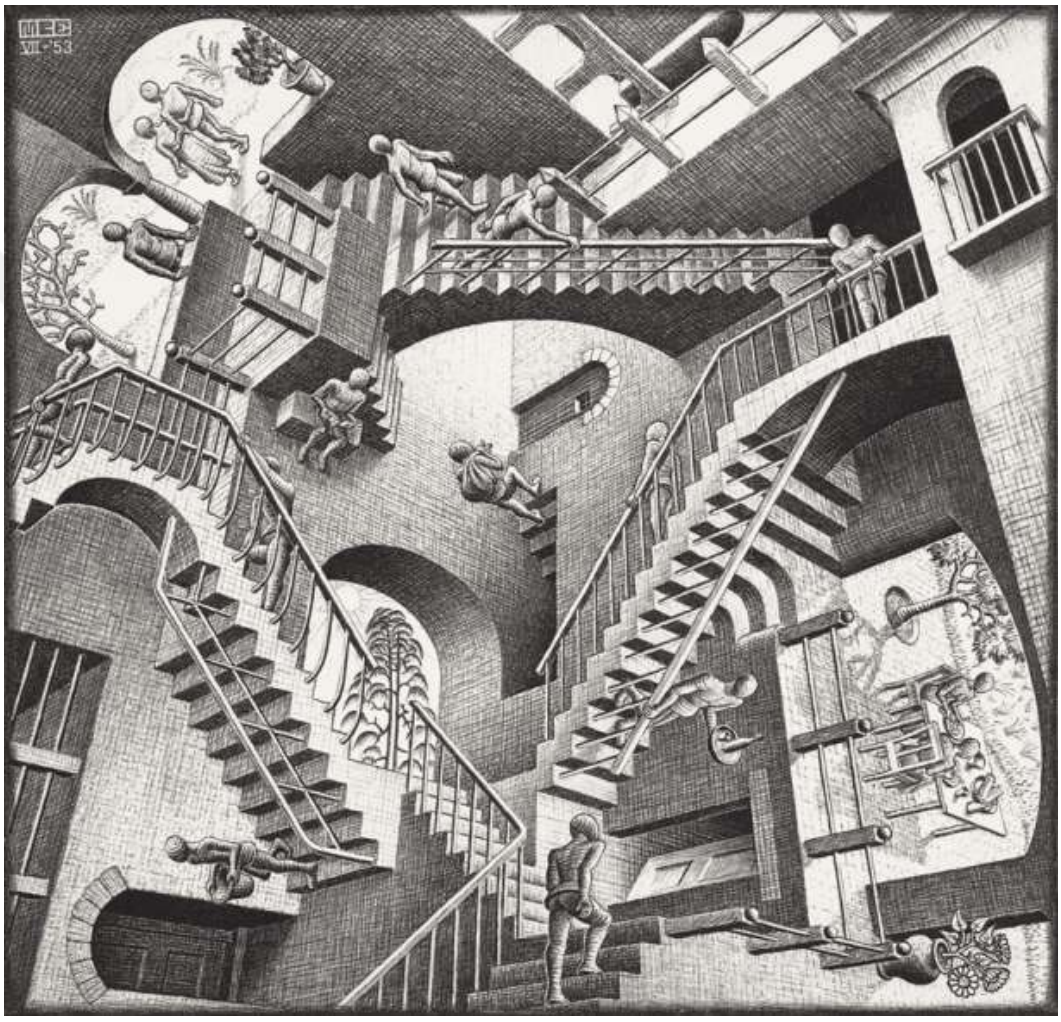
The differences within metropolitan city make sense in terms of diversity. In other words, today's city has a complexity on account of being unpredictable and having an open-minded formation. While including intense relations, it makes it possible to both protect the social relations and alienation on an individual scale. The interactions are keeping the metropolitan city alive. Collisions, breakings, touchings, passings and separations between layers provide the city to be dynamic at any time. But at the human scale monotony and instability usually dominates personal experiences. This situation can be seen as an element, which ensures the reading of the conflictive city.

"Guy Debord looked at the city as a holistic urbanism and suggested that changing the look of the city was more important than our perception of art. To perceive the city, to perceive everyday life and social interactions, means to understand the human with all its values and relationships. The use of all arts and techniques constitutes the essence of an integrated environment..." (Erzen 2015). During the analyzation of the layered structure of the metropolitan city, classification of social and human characteristics can be observed. Vertical and horizontal layers can be viewed. The vertical layer can be defined as a city's physical specifications such as history, geography, geology and architecture. On the other hand, the horizontal layer can be defined as a city's social specifications such as economy, education, politics, culture, language and belief.

The layers of a city cannot be examined separately. Metropolitan city which is an architectural unit, defines itself with social layers. The physical structure, architecture and form are the references for it. As a living space, the city is one of the most important spatial and complex forms created by humanity. According to Lynch, the city, which is equipped with numerous places such as buildings, streets, roads, junctions, bridges, monuments, pavements, bazaars, entertainment and sports fields, art centers (Lynch, 1960). As Lynch emphasizes, the landscape, the culture and the history which include the city and the environment composed by these pieces can be considered as a few of the physical layers of the city.

Lynch describes that; "the physical characteristics that determine districts are thematic continuities which may consist of an endless variety of components: texture, space, form, detail, symbol, building type, use activity, inhabitants, degree of maintenance, topography." (Lynch, 1960). To study this integrated physical structure

of metropolis also means to examine the facts that make up the structure of metropolis at the same time. Today's metropolitan cities have a heterogeneous structure that transcends the perception limit of the individual, and is trying to adapt itself to new situations and whose boundaries are now unclear. In this context, M.C. Escher's drawings can help visualize the imagery and dynamics that depict the city.



Picture 3.1. : The chaoticity of the space (Dudovskiy 2015)

In the spatial drawings of Escher, the first things, which attract the attention, are precession and intensity (Picture 3.1.). Urban spaces including rise and fall are stratificatedly shaped. Today’s metropolitan world is not only under the spatial impact, but also under the impact of mental intensity. Escher’s drawings reference this intensity on an imaginary level besides the dynamic structure of spaces existing in the individual/society. The city is the scene of experiments. All forms of both

individuals and spaces find themselves in the city scene. Life generates a dynamic structure, which integrates and is powered by time and space.

The intricate patterns of life in the metropolitan city are mirrored in Escher's drawings, and visualized with endless ups and downs of topography. Because of the fact that city is the scene of society, he indicates the physical form of city as a whole which allegories the key-lock system with the human actions.

"The whole is greater than the sum of its parts." –Aristotle

Just as Escher illustrates, beyond being a physical phenomenon, Erzen describes the city as an atmosphere where physical phenomena are associated and organized according to several values (Erzen 2015). In this context, a city should be seen as an entire system in the frame of human actions. A metropolitan city can be evaluated as an organism with consciousness rather than an mechanism. Weber, in his book 'the City' argues that it is not possible to reach an adequate concept of urbanism by continuing to define 'urbanism' with the physical characteristics of the city (Weber 1966).

The City includes clusters of sociological problems and each research on them could provide enlightenment about how a city structure is generated. In this context, the metropolitan city and the individual are confronted as two elements which cannot be thought of as separate, and which define their existence by resolving and understanding each other.

Metropolis is the whole of agglomerations when the events and actions that have been mobilized along with the day-to-day life are brought together and superposed on the total of the cross layer relations. Robert Park, urban sociologist, also argues that the city is more than agglomerations and social comforts and proposed that human behaviors should be examined. Park, like the other theoreticians, does not consider the city only as a physical set up, and he includes the social situation as well. He claims that the city is also an economic unit beyond being a geographic and an ecological one. In addition he claims that the city is a mental condition established by customs and traditions. According to him, the city is the natural life space of the civilized person and should be considered useful so long as it provides a utilization value for the individual, because the physical set up of the city had been established around the daily requirements of the people (Park, E.Burgess ve Mckenzie 1925).

Just like Park, Lefebvre also mentioned that will be useful to subdivide the day to day life in the cities such as work, private life and free time and the use and organization of time should be thought of. He also claims that the physical planning of the cities alone will not be sufficient and day-to-day relationships and social life should also be considered (Lefebvre 2002).

"Today the reality of the city is more in its social dynamics, life rhythms and communication networks rather than its static physicality, buildings, roads and streets. The real city is where time and space moves, where people are engaged in communications and relations, what makes relations possible, where space lives through the movement of the people" (Erzen 2015, 127).

The beauty of the metropolis originates from the compatibility between its components. Its dynamic, social and cultural layers play an important part for the city's physical structure and image and all contribute to its characteristics. Identity could be seen as a fact defining the social layer of the city. Identities, attitudes, behaviors, customs and traditions penetrate into the urban space through their value judgments, beliefs and ideologies and bring the city into existence.

Every layer of the city harbors within itself various different "codes" those are consistent. The city being the stage of the society is made possible through certain codifications. While making sense of the layers, it is observed that the stakeholders of the city are restructured in integration with these codes. Codes of a city belong to certain layers. The main axis of the metropolis defines its existence with this restructuring. In this context, making correct sense of the layers of the city depends actually on scrutinizing and clarifying the social and cultural codes belonging to that society.

3.3. The Degrees Of Complexity In Metropolitan City

The levels of complexity can be distinguished in the context of the stratification of the metropolitan city. As shown in the Figure 3.2., the line of complexity is searched between 'the order' and 'the disorder'.

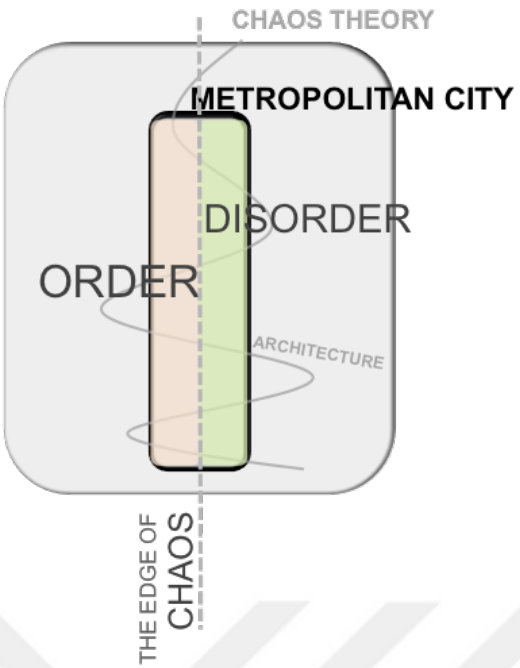


Figure 3.2. : The diagram of the degrees of complexity in metropolitan city

3.3.1. Disorder

"We are surrounded by complex objects, but what is complexity? Living organisms are complex, mathematics is complex, and the design of a space rocket is complex. What do these things have in common? Well, probably that they contain a lot of information that is not easy to come by. We are as yet unable to produce living organisms from scratch, we have a hard time proving some mathematical theorems, and the design of a space rocket requires a lot of effort. *An entity is complex if it embodies information that is hard to get.*" (Ruelle 1991, 136)

"The way of living called urbanism is nothing more than the sum of those encounters, or even a chaotic choreography. The city is made by those encounters ..."

–Uğur Tanyeli (Tanyeli 2013, 394)

The stratified structure of metropolitan cities is a dynamic system and under the impact of complexity. Since metropolitan cities have dynamic systems, they have a structure enabling different cultures, change, density and relations. The unpredictable feature of chaotic systems is also valid for metropolitan cities. It can produce

irregularity from order in time and vice versa. This situation makes the metropolitan cities more stratified by increasing its chaotic structure.

"Since the city is not homogeneity, but heterogeneity and pluralism, it is possible to talk about relations between actors in every era. For a long time, an important part of the urban actors have played the roles of silence and hesitation required by their social status. Or rather than talking, they have acted in the practices of everyday life."

–Uğur Tanyeli (Tanyeli 2013, 395)

The features that the theory defends can be observed in the dynamic world of metropolitan cities, i.e. the self-organization known as one of the keystones of the theory finds itself in terms of clusters of space/society. The city image that occurs in the memory of the individual is formed with respect to the environment, society and circumstances that he/she lives in. As Simmel mentions, people are creating images in their minds regarding the city while being exposed by stimulating intensity, and getting used to being unresponsive to this situation day by day (Simmel 1950). City and society constitute a self-organization system in order to create a harmony between each other. Furthermore, they evolve to a more complex order by self-organization in the process. As a result, as Nazire Diker notes, this order is attractive to researchers in the field of social and urban studies (Diker ve Ökten 2009).

Social units get self-organized and rise to a new and even more complex state of "balance and order". This balance and order is sustained for a period of time and during this process the social units become diversified, more complex and they multiply. This causes the balance and order to be disturbed in time and a new "chaos" state to appear. Then this state of chaos is followed by a state of "self organization" again. Every social unit gets involved in a process of self-organization when the social diversities are high in numbers causing uncertainty and chaos (Diker ve Ökten 2009).

Sensitive dependence on initial conditions, one of the important keystones of the theory, is a property that proves the chaoticity of cities. Depending on initial conditions means that the pieces cannot be considered separately and this situation involves a transition. In fact, chaos theory is a progressive science. It does not

investigate the existence; instead, it deals with process. In this context, ignoring it seems inadequate to examine the city on instant situations.

Simmel considers the city as a problem of mentality and identity. He describes the city with the effects of human beings in the frame of the changes that have taken place on the individual as a result of the transition from village life to city life. (Simmel, 2003). In this context, changing and transforming city reaches a consensus due to the progressive feature of chaos theory. Thus, it can be concluded that the change constituted in the social layers of the city may affect all the existing layers.

One of the other significant features of the city proving chaoticity is unpredictability. Since the lack of the classical science has been noticed, classical spatial devices have been insufficient on predicting the future of city. Because, by pushing its limits, the concept of the metropolis, which constantly establishes and disrupts the relationships it has established, keeps its system alive by moving between order and disorder. In parallel with the view, Louis Kahn tells us that the uncertainty of the future is not possible to make a solid prediction: “Tomorrow you cannot predict, because tomorrow is based on circumstance, and circumstance is both unpredictable and continuous.” (Kahn 1998, 39).

Today, cities have reached very high levels of complexity, and have entered a very rapid process of interaction and change. In this process, it becomes impossible to predict the future when interconnected variables, structures and subsystems reach almost infinite variety and an "uncertainty environment" is formed. The "uncertainty environment" causes a "chaotic situation" which means that cause-effect relations between events cannot be distinguished (Diker ve Ökten 2009).

Nowadays, metropolitan cities, which change rapidly, have reached the maximum interaction level. The stratificated structure makes it quite difficult to estimate the future, which depends on several variables, components and infinite infrastructures. This causes the transformation of chaotic city structure to uncertainty.

City conflicts with itself. Whereas the dynamics of the city are always monitored, the effects of them differ according to the social groups’ specifications. Some social groups accept a situation as an order; other ones can see it as a decomposition power, which directly affects themselves. Therefore, movement, conflict and resistance are always commanders in the cities. Heterogeneity, which is made by the effect of

different characteristics of social, gathering in cities, force people to interact. Society tries to exist in this chaotic environment.

Because of the dependence on initial conditions, a force applied to any point in a non-stationary structure of the chaotic metropolis can affect the whole organism by creating a butterfly effect. As the number of activities increases, the movements are transferred to each other and a synergistic environment occurs. Unpredictable power arising from the union of people at different levels according to a wide variety of similarities, such as the common "problem, purpose, need, interest, ideal, etc." can be described as "social synergy" (Diker ve Ökten 2009). The metropolitan city transfers this synergy to the city over time. Calvino describes the production of this fused disorder in the city as follows:

"With cities, it is as with dreams: everything imaginable can be dreamed, but even the most unexpected dream is a rebus that conceals a desire or, its reverse, a fear. Cities, like dreams, are made of desires and fears, even if the thread of their discourse is secret, their rules are absurd, their perspectives deceitful, and everything conceals something else."

–Italo Calvino (Calvino 1972)

3.3.2. Order

" ... there is a fundamental law about the creation of complexity ... (which) states simply this: all the well-ordered systems that we know in the world, all those anyway that we view as highly successful, are generated structures, not fabricated structures." (Alexander 2002).

"Among the multitude of impossible tasks that modernity set itself and that made modernity into what it is, the task of order (more precisely and most importantly, of *order as a task*) stands out -- as the least possible among the impossible and the least disposable among the indispensable; indeed, as the archetype for all other tasks, one that renders all other tasks mere metaphors of itself." (Bauman 1991, 4).

"Everything having physical, social, cultural, religious and urban characteristics that had a form in its origin in the past is getting lost now. Losing the form means chaos; chaos that has to be absolutely obviated... Everybody in the early modern

urban planning history always thought and designed in these lines. For instance, all utopian cities have been set forth within this rationality: the cities should be given a form that would never be disfeatured. That form shall always remain functional, and shall represent an order that will always be satisfactory in terms of aesthetics" (Tanyeli 2013, 390).

When metropolitan city is examined, its density, liveliness and layers stand out at first. However, this intense dynamicity does not occur only with the integration of dynamic systems. In addition, there exists some linear phenomenon that provides the continuum by affecting the layers of cities because of the fact that societies can manage their functionality on cities consistently in the historical process.

"Hobbes understood that a world in flux was natural and that order must be created to restrain what was natural... Society is no longer a transcendentally articulated reflection of something predefined, external, and beyond itself, which orders existence hierarchically. It is now a nominal entity ordered by the sovereign state, which is its own articulated representative... [Forty years after Elisabeth's death] order was coming to be understood not as natural, but as artificial, created by man, and manifestly political and social ... Order must be designed to restrain what appeared ubiquitous [that is, flux]... Order became a matter of power, and power a matter of will, force and calculation... Fundamental to the entire reconceptualization of the idea of society was the belief that the commonwealth, as was order, was a human creation." (Bauman 1991, 5) (Figure 3.3.).

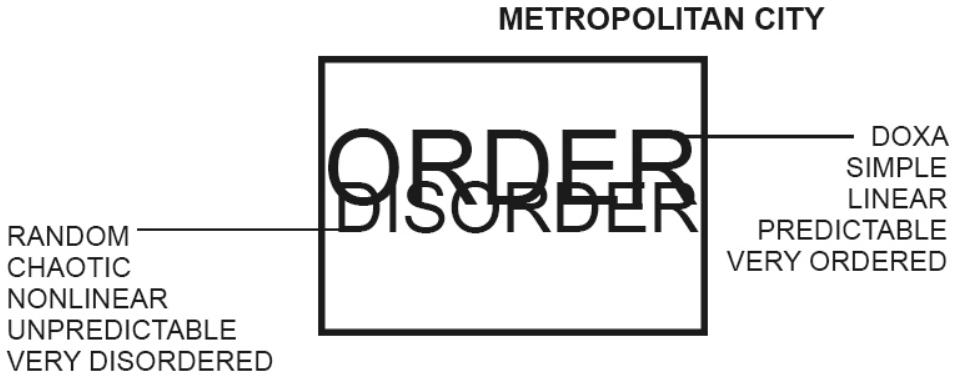


Figure 3.3. : The levels of complexity in metropolitan city

The city needs order to restrain the density under the non-linear structure of the city, it is considered that there are some solid and linear structures which ensure that the city is in order by the society. It is only possible that the control and continuity of a non-linear system relies on a linear system to exist.

The metropolitan cities can be seen as an order in irregularity. The actor generating the order of city is 'society'. The nature is chaotic. The society needs simplicity and avoids irregularity. Hence, the city is a scene where all diversity gathers and the continuum is always provided. This complex system is the cooperation of nature and society; however, it can be added that the uncertainty of the nature is prevented by society. Berman, in 'All That is Solid Melts into Air', expresses this situation as follows:

"…This form of modernism has left deep marks on all our lives. The city development of the last forty years, in capitalist and socialist countries alike, has systematically attacked, and often successfully obliterated, the "moving chaos" of nineteenth-century urban life." (Berman 1982, 168).

City is one of the orders of the human beings that has been simplified for the purposes of controlling its complexity, and that was set up through association by establishing similarities and differences. The city harbors systems and sub-systems supported by a certain worldview. Just like observed after looking at the fractals from different distances, there are intertwined systems of different scales in the cities as well.

It can be said that the cities have the characteristics of complex systems in order through the Chaos Theory. The number of variables in complexities in disorder is very high. It is hard to foresee the behavior of a system. However, complexity in order bears variables to a quantifiable degree within itself and it is possible to be controlled. The same holds for cities. As their level of chaotic aspects increase, the cities are transformed into metropolises. However, even the metropolises have a balance within themselves.

Societies and settlement systems, the sub-systems that belong to them and their components are extremely complex systems when their interrelations and their relations with their surroundings are considered, in the process that they evolve into

an even more complex order after being self-organized in chaos. The order that arises with the process of self-organization from within the state of chaos has drawn the attention of researchers working in the social and urban fields (Diker ve Ökten 2009).

The layers that make up the whole of the metropolis try protecting their own existence even if their definitions and the relations they have with the whole changes. In this context, it seems possible to associate cities with the ivy metaphor (Picture 3.2.). The ivy describing the chaotic areas of the city defines its existence with the garden fences that allegorize the rigid, clear, linear, fixed and strong system created by the society. It could be said that the order and chaos relation in a city appears exactly like this system. This metaphor could also be seen as the reflection of chaos in order that gathers together the linear and non-linear systems.

Picture 3.2. : The metaphor of ivy

Order means establishing social reconciliation spaces. In other words, this means that an individual living with other individuals becomes possible when an agreement on certain conditions has been made or when a certain will is adopted. In this context, the continuation of the order does not become possible by the power influencing the

city alone. The individual appears to be the stakeholder who is most affected by this use and who provides the order. Because order does not consist of urban or social order alone, order is the structured state of consciousness, since consciousness is the way the order in fact is perceived. In other words, consciousness cannot be spoken about without order. So this effort discloses itself with the coding of the orders into layers.

According to Chadwick, who was the first to adapt system thinking to the field of planning; Buildings and cities become a system when they exist together with people, and only then do the feedbacks with the information and energy flows that must be between the subsystems (Chadwick 1971). Settlements are dynamic and complex sub-systems; the living, dynamic, and more complex big system, including settlements, is society. Just as human beings come to mind, not just physical bodies, but multidimensional features, societies are living systems with multidimensional - complex features, and spatial structures can also be seen as the bodies of these creatures (Diker ve Ökten 2009). Therefore, as Cansever emphasizes: “The city is the city, not the houses alone. The city is the whole of the buildings, building groups and transportation, infrastructures, social equipment systems that connect them, and the organizations that distribute and operate them, all of which are housed in these activities (Cansever 1996).

4. THE ATTITUDES OF TODAY'S INDIVIDUAL ON THE COMPLEXITY LINE

On the line of complexity, the individual of today positions himself / herself according to many social, economic, political, cultural, religious, and other parameters (Figure 4.1.)

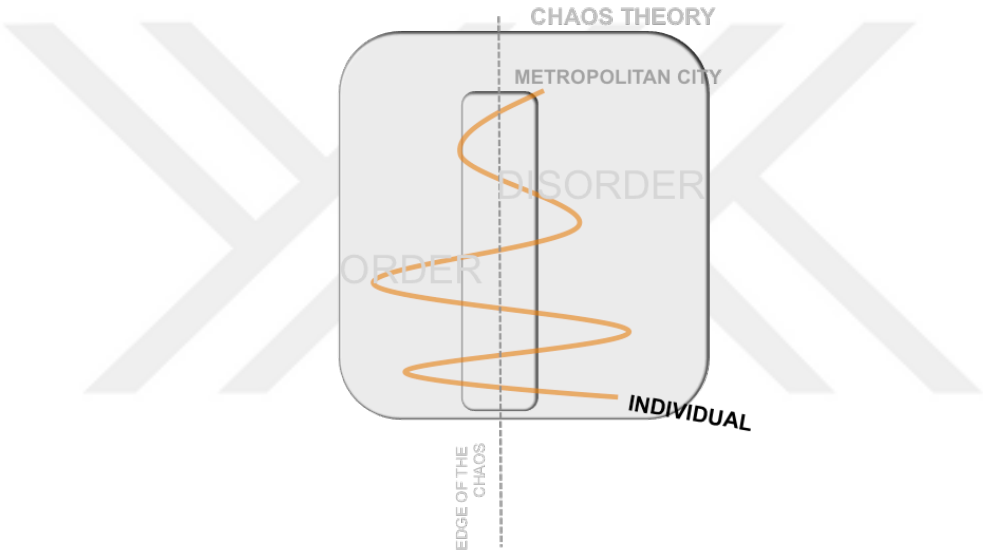


Figure 4.1. : The diagram of the individual on the complexity

4.1.Under The Domination Of Order; The Blasé

This created status cannot be considered independently from the stratification, because of the fact that this status is directly related to the codes distributed to every side of the city by society. According to Cansever, in this formation, man has brought to the body the administrative systems that enable the increasing and intensifying population of the city to realize these activities without causing conflict or confrontation (Cansever 1996).

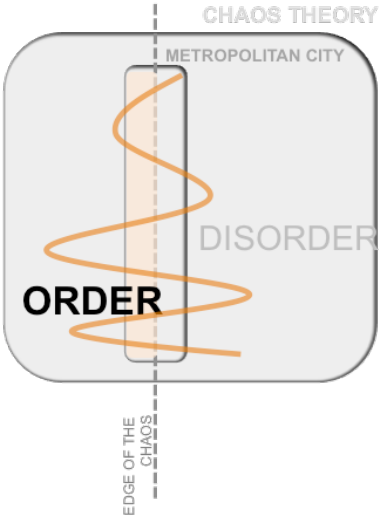


Figure 4.2. : The diagram of the individual under the order

The linear system affecting the citizens directly reflects to the physical structure of city (Figure 4.2.). Domination transforms the spatial structure to the forms that the city doesn't have or it joins various equipment. This situation has reached an extend in the metropolitan cities, such that the truth itself became simulacra as Baudrillard stated (Baudrillard 1994). As an example, it provides interesting inferences of investigating whether a street is a street, a square is a square or a park is a park. Indeed, the spaces called streets have no functionality due to many reasons. But we accept these spaces, which are imposed as streets. It can clearly be realized that disappearance of public spaces, mass production spaces and linearity of time in daily life. In other words, the context of space deviates from its reality. The appearance, which is wanted to be perceived as real, is transformed to our reality.

A metropolitan resident hesitates to think during actions within the contexts of an institutionalized living environment. Because, the life style of a metropolis directly affects the daily life of residents and sets its own routine. According to the paper, `Metropolis and Mental Life' of Simmel, humans resist the mechanism of socio-technologic decomposition and fatigue (Simmel 1950). The density of stimulant on nerves constitutes the spiritual basics of a metropolitan type personality. This is because of the fast and continuous change on stimulants. Mentality is stimulated by the differences between the consecutive impressions. Permanent impressions need less awareness, which have minor differences and stays in a common order (Figure 4.3.)

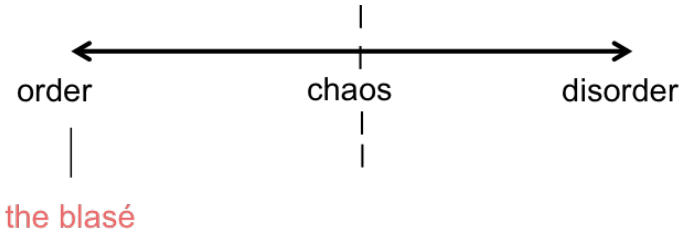


Figure 4.3. : *The Blasé attitude on the complexity line*

"To the extend that the metropolis creates psychological conditions- with every crossing of the streets, with the tempo and multiplicity of economic, occupational and social life- it creates in the sensory foundations of mental life, and in the degree of awareness necessitated by our organization as creatures dependent on differences, a deep contrast with the slower more habitual, more smoothly flowing rhythm of the sensory-mental phase of small town and rural existence." (Simmel 1950, 11-12)

Richard Sennett's book 'Authority' begins with these words: 'The need for authority is basic.' (Sennett 1993, 7). 'The society feels secure only when it attains a firm integration within itself. Like Simmel, Lefebvre also claims that most of the people who have been caught between this complex city set-ups do not know how they live or have a wrong understanding of how they live on an individual scale. People with this insensibility, view this life through the prism of ideological themes and ethical values. They interpret that; they misstate this, as they are wrong about their needs and their aspirations. Having said that, this is their life and their consciousness of life; however, the sociologist, even the novelist who is informed only through the philosopher and the dialectic can accomplish putting together or combining experience with the truth, and formal structure with the content of daily life. Even when one consciousness reflects one thing, in fact it actually reflects power along with the requirements and possibilities of the action. Through this line of thinking, even thoughts can influence one's environment.

"*Familiarity, what is familiar, conceals human beings and makes them difficult to know by giving them a mask we can recognize, a mask that is merely the lack of something...*"

-Henri Lefebvre (Lefebvre 2010, 15)

“But the familiar is not necessarily the known. As Hegel said in a sentence could well serve as an epigraph for the Critique of Everyday Life, 'Was ist bekannt ist nicht erkannt.' Familiarity, what is familiar, conceals human beings and makes them difficult to know by giving them a mask we can recognize, a mask that is merely the lack of something.” (Lefebvre 2010).

While daily life keeps an individual within its boundaries, it becomes esoteric and does not get discussed much. Individual identity moving among fluid images in daily life condemns one to orders placed on the layers of the metropolitan city; therefore, he/she becomes desensitized by imposed arousals and unusual occurrences that would affect a visitor.

“*Premodern trains ran predictably and boringly in circles, much like children’s toy trains do...*”

–Zygmunt Bauman (Bauman 1997, 73)

It is thought that being liable to traditions, ideologies, certain ethnical congregations, groups, norms and any whole of opinions that have been accepted by society provides conveniences in terms of the day to day life of the individual. Since the social world is one that continuously imposes its own requirements by means of its “ready-made action and perception schemes”; the individuals can never monitor their actions, thoughts and statements like a spectator (Koytak 2012).

The origin of human actions rests in the relationship between the two sides of what social is; the thing that we call society has been objectivized as institutions and things on the one hand, and exists as habitus as predisposition schemes towards presuming, feeling, thinking and behaving that has been internalized in the bodies of the perpetrators (Bourdieu, Leçon sur la leçon. 1982). “Habitus can be defined as the context where various components are in social, cultural and economic interaction. In the context of cities we should consider these as multi-dimensional system of relations in parallel with our senses” (Erzen 2015, 106).

In the feudal world, “free man” is thought to be a man who is dependent upon and protected by the law of the country. The person who is not free was seen as the one who received his rights from a narrow feudal unity and who had been alienated from the larger social framework. Simmel defined today’s city residents as “free” in the meaning of having a more developed sense of spirituality and taste as opposed to the

residents of townships who had been limited by narrow patterns and prejudices (Simmel 1950). However, the aspect that has to be carefully considered at this point is that while the boundaries of such freedom are extending during the modern age, the spaces of the orders are also widening. The individual makes choices in order to cope with the complexity of the metropolis and gives up some of his freedom in order to gain his personal freedom. The establishment of political groups, societies, networks of relatives and congregations arise out of the necessity felt by human beings that they have to protect themselves within rigid boundaries and a central unity and achieve a sense of belonging. It is very difficult for an individual who has been raised with order to cope with the dominant system neither mentally nor practically and to get out of that framework.

"This is an urban play where almost everybody is unwillingly playing a part. This is probably the reason why nobody concentrates on the play. It is for the same reason that nobody would speak openly for altering the play to fit their own benefits, roles and expectations, nobody would try, nobody would propagandize, and nobody would look for any reconciliation with the other actors. The reason for this is that he would not define himself as an actor who is different from the others, inevitably. There is a regime of righteousness whose validity is unquestionable. However, whether it is considered to be legitimate or not, since everybody has their own benefits, they all disregard the rules of the play for their own benefits, and they all go around that regime of righteousness whose validity is unquestionable. However nobody would dare to write the play all over again. More importantly, nobody would waive the regime of righteousness at hand that is worn and impossible to be individualized. As it were, we are speaking about an urban existence mechanism here just like large crime gang"

-Uğur Tanyeli (Tanyeli 2013, 399).

The individual is put into a certain frame by the system and the system automatically undertakes the production of the individual in conformity with the required model. This set up is not normally consciously realized. We can come across this set up right at the heart of daily life, in newspapers, in books, in magazines, in films, in lectures, at wedding ceremonies, during shopping, at celebrations and at various vital practicalities. Order is an indivisible part of these practices and continues to exist alongside such practices. The individual structures

his communications with the other individuals and his existence within the society and the city in accordance with these provisions. Such provisions create the basis for the urban behaviors -learned behaviors- of the person. This whole set of judges convicted in society is defined as Doxa in the sociology of Bourdieu. Bourdieu claims that the origin of the social actions of the person in every field from daily life to politics, from cultural tastes to the manner of speech is governed by the society inside the body of the individual (Bourdieu 1982). It is an observable truth that the individuals go on living the life styles that have been imposed upon them by the society, go on living without questioning the behavioral patterns and give in to the domination without utilizing their mechanisms for questioning and criticism.

Figure 4.4. :Doxa

The source of the Doxa concept is the first preSocratic texts of philosophy. The doxa, which means "conviction" in Greek, refers to a distorted and misconception about the existence or general existence of reality in the philosophy of Parmenides.. In this sense, it is again considered in a dialectic opposite to the episteme, which means "knowledge" in Greek. Common stereotypes, collective stereotypes and stereotypes about collectivity or wholeness include Doxa (Bourdieu 1997).

In modern philosophy, the concept of "ideology" is used in a sense close to doxa, especially in the Marxist line: Althusser defines ideology as "an imaginary relationship with the actual conditions of existence in which the individual is" (Kazancı 2006). In this context, Doxa is the effect of domination on subject. It does not only reflect on mental structure, but also on practices and life. It works in the same time and in the same way, forming and nourishing from it. In fact, doxa has existed before individuals and waits for dominating the subjects.

Doxa points to a certain worldview. However, this view is the worldview of the sovereigns and presents itself as a universal worldview. Through doxa we "accept many things without knowing, and that is what we call ideology." The doxic order is always kept alive through the symbolic power and violence between the judge and the subject. The unquestioned opinions, beliefs and traditions that have been negotiated on are within the semantic limits of the doxa concept. In Eagleton's words, "Doxa is the dominant opinion in society, it is the absolute reality, it does not even need to be said anymore." (Eagleton 1992).

It can also be said that the doxa concept in Bourdieu is associated with the concept of "natural attitude"(naturliche einstellung) in phenomenology. For Husserl, and especially for Alfred Schutz, the natural attitude corresponds to our sense of perception and thinking of the world in an ordinary form, and this attitude consists of various habits, anticipations and assumptions (Öktem 2005). Phenomenological analysis takes this natural attitude in parentheses and determines and investigates these habits, familiarities, and so on, so that people try to think about how they experience the world.

Doxa is also open-minded when examining what the state is and how it works and how elitism has become established in the field of education. Bourdieu reminds us that many social scientists assume that the social order is founded on reconciliation and agreement, and that in this situation they try to understand how the state (or other central political power centers) have discursive legitimacy. For him, however, this is a delusion, because discursive constructs that regenerate the power of the state are not physical forms of consciousness but physical tendencies. That is, practices that perceive the world, experience it, and act within the world.

Richard Sennett tried to analyze urban life alongside social integrity as well. According to Sennett, the most important characteristic of the city is that this is a

public realm where we can successfully relate to each other without having to hide our personal differences. Sennett associates modern culture with the difference between the interior and the exterior in The Conscience of the Eye. The difference is between the private realm and the public realm, between the self and the city. This difference originates from the fear of opening up.

Opening up frightens them and urbanized citizens prefer living cautiously. It could be argued that by reducing the human relations in the city to shopping and tourism, the city recollections in the minds of the individual had been diminished and left without an identity. In this framework Sennett questions how to deal with this loss of identity and the tools for making the realities of the urban space to be reinstated as a dimension of human life again. According to him, this is an issue for culture (Sennett 1990). Under such circumstances, maintaining the social relations within the framework of certain orders, judgments, values and perceptions directly affects the physical structure of the city. Social values find their match directly in urban aesthetics both in physical and visual terms.

In city, citizen takes position with the fear opening him/her to the external world, produces strategies for the environmental relations and builds spaces. The relations in city are about time and space. These are emphasized by the steps, borders and desires that define the opportunities of individuals. We can say that the dynamic control mechanisms on our daily lives are aiming to broaden their sovereignty by changing their form and function. Moreover, it is very clear that the mechanisms of collective domination have produced new hopelessness about the future of the city and the actors of the city in general. We can observe in our practical life that the individual contributes to the production of despair as a party within these mechanisms.

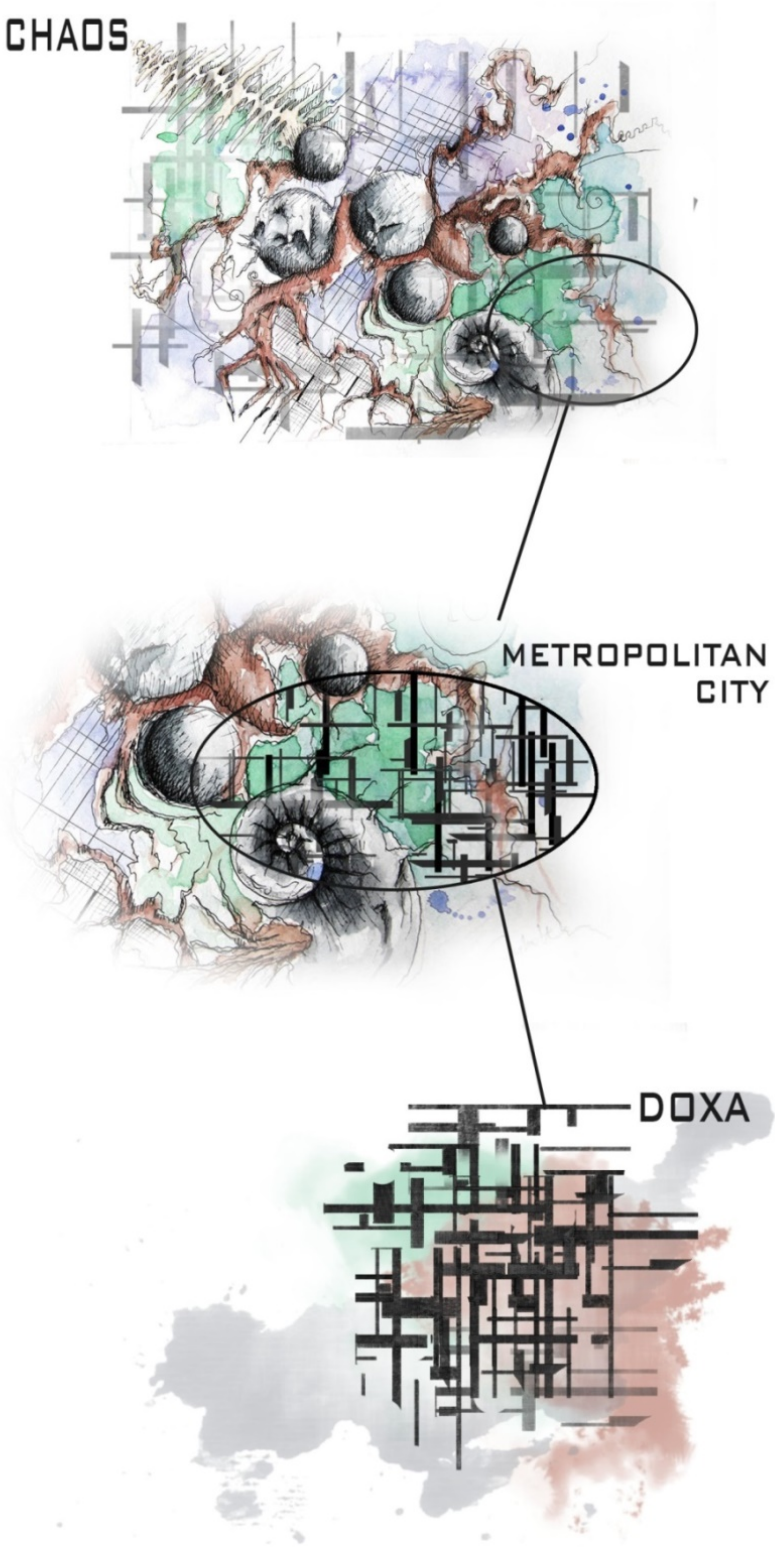


Figure 4.5. : The relationship of Chaos-Metropolitan City and Doxa

4.2. In The Shadow Of Disorder; The Idle

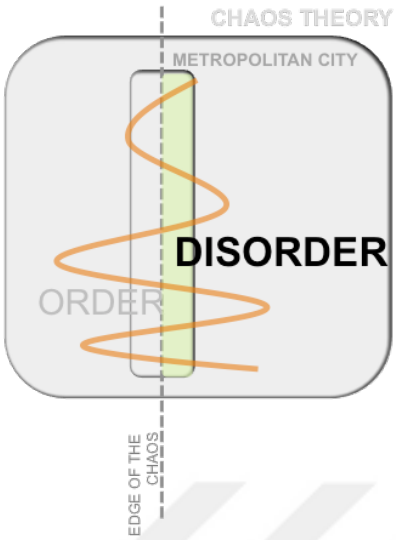


Figure 4.6. : The diagram of the individual under the disorder

This attitude that emerges as an opposing attitude on the other side of the line can be thought of as the mental state of the individual who has no sense of continuity or sense of obligation and who rejects all social ties. In this respect, it is seen as a deviation from 'normal'. This is a period of deterioration in which internal life in the form of isolation, loneliness, lack of communication, lack of purpose, worthlessness, void, hopelessness, and futurism are experienced intensely and violently. This attitude, who is in a passive revolt, is standing against all the values of society, institutions and lifestyle.

Even though it has the possibility to observe the blasé attitude under domination from the outside, this attitude is at least as violent as the uncomfortable. This violence is too far from the ability to produce the new, since the uncontrollability, unpredictability, remains under coincidence and creative thinking can not be achieved in authoritarian, restrictive, over-structured environments.

The integrity and continuity of social structure depends on adhering to established norms and adopting basic social values. However, in a society with a dynamic structure, there is always a stance against common norms and social values adopted. Such behaviors, called deviation and crime, threaten the continuity of the social order.

Crime was first brought to social science by Durkheim as a phenomenon. Durkheim's analysis of urbanism and the famous 'anomie' theory has also been the key to debates on the workings of the Chicago school and on the characteristics of crime in the cities of the industrialized cities (Sipahi 2016).

According to Durkheim, when an individual is indecisive about which institution and rule to follow, it is also difficult to integrate with the society. The individual who immigrates from the village to the city and lives in the city will experience an anomaly in the face of the changing social rules and institutions in the city where he lives. He will have confusion between the traditions and customs of the rural and the new values brought by the city. As a result of this fickle, the individual can be excluded from the society and this situation can reveal the violence and criminal tendency that has not been hidden in the excluded individual until now.

In parallel with Durkheim, according to Merton, anomie is the break between the cultural norms and goals and the social structure that forces the individual to find them in an appropriate and harmonious manner. The cultural structure (values, norms and goals) faces the danger of demolition as these breaks become more important both quantitatively and qualitatively (Tolan 1983).

Albert Caraco, who is the writer of the 'Breviario del Caos', states that the man expressed his disgust to 'order' in a provocative manner. According to him, it's clear that anti-ideology is, moreover, an enemy of ideas and all ideas are addictive and they do nothing but automate us. This counter-stance is so strong that it argues that today's cities can only be changed by destroying them: "…Then we will not retreat in the face of anything, and even if it is seen as the most barbaric thing, we will be chaos and death priests. The order will be our victim and we will sacrifice the ridiculousness of the nonsense, we will increase the natural disasters, we will make mischief." (Caraco 2006).

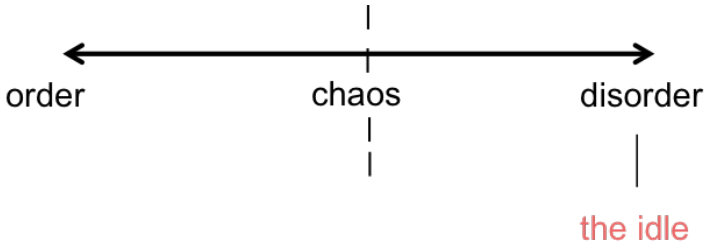


Figure 4.7. : The Idle attitude on the complexity line

This attitude is considered 'excessive' when first encountered; but can be a striking example for the idle model that is to be ‘the other’. ‘To be the other’ is a kind of ‘estrangement’; stranger to the existing ones. As Bauman says: *“there are friends and enemies. And there are strangers.”* (Bauman 1991, 53).

The need of mankind shows itself when we put things on the ground that we perceive and systematize them. However, we are constructing an artificial order by labeling objects and distinguishing between things with and without a real sense of what they are. The ‘stranger’ is a concept that emerges in order to be able to define the different things in this moment. The stranger is the phenomenon created and excluded by us. The stranger is both near and far at the same time. The existence of the stranger does not change. The effort to bring a limit to the uncertainty of strangeness manifests itself in urban planning. The city has a function that narrows its boundaries. We generally try to avoid focusing on the ambiguities, uncertainties and insecurities of the liquid world we live in. This situation reflects our daily lives directly on the urban level.

It can be said that fearing and escaping from the stranger leads the city to the formats that a city does not really have. It adds different equipment/roles to the city and as Baudrillard says, 'the truth itself becomes the simulacra' (Baudrillard 1994). The space of 'the stranger/other' is being produced in a foreseen way and the city is assumed as an environment in which the stranger is controlled under the desired manner. As long as an individual who is far away from the intellectuality does not question the situation imposed on him, he makes it his own reality. According to Bauman, in fact the real freedom and liberation is only possible through the acceptance of differences and the rejection of complacency (Bauman 1991). The individual cannot catch the feeling of freedom when she/he is in a worrying mood created by the stranger. As a matter of fact, despite the argument of Bauman which states that modernity aims to and should destruct ambiguity and create a static order, this effort actually increased the ambiguity in the city. The source of increasing ambiguity is seen as the stranger. Along with the growing crowd in the city, the lifestyles generated by different layers and cultures have increased the tension in the city such that the metropolitan city has now become a place where strangers "stand and move around each other" (Bauman 2010).

“Not togetherness, but avoidance and separation have become major survival strategies in the contemporary megalopolis. No more the question of loving or hating your neighbor. Keeping the neighbors at arm‘s length would take care of the dilemma and make the choice unnecessary; it staves off the occasions when the choice between love and hate needs to be made.” (Bauman 1998, 48).

According to Sennett, the stranger can be assumed as the synonymous with the outsider, and appears in a landscape where people have enough sense of their own identities to form rules of who belongs and who does not (Sennett, The Fall of Public Man 1977). Thus, the stranger who does not belong to the city and the citizen who defines himself, his boundaries and his surroundings against the stranger pushes the architect of today to a totally different plane on the line of complexity.

4.3. On The Edge Of The Chaos; The Anti-Fragile

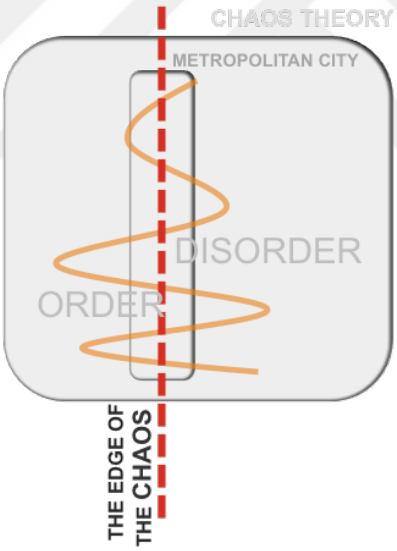


Figure 4.8. : The diagram of the individual on edge of the chaos

“*Chaos is rejecting all you have learned, chaos is being yourself.*”

-Emil Cioran (Cioran 1975, 29-30)

According to the mathematical theory, the edge of chaos is the most critical region on the line of complexity. In this region, a small change can either drag the system into a chaotic behavior or lock it into a constant behavior. Additionally, systems are not clearly defined and are subject to change in this region. The general feature of

these systems is the unpredictability of certain behavior within a predictable behavioral structure. On this edge, the system makes the most complex calculations using the greatest potential. In other words, this border represents the easiest situation of change.

Building on the discoveries of chaos theory, complexity theorists claim that it is at frontier of the phenomena of chaos, the "narrow domain between frozen constancy and chaotic turbulence," that the most complex and adaptive structures can be found. (Bousquet 2009, 178).

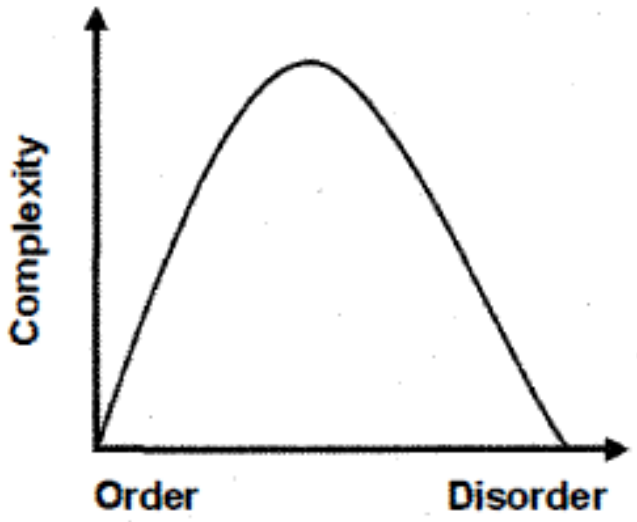


Figure 4.9. *:* Complexity in between the poles of order and disorder

(Bousquet 2009, 179)

This can be explained by a simple diagram (Figure 4.9.). Gell-Mann proposed that the length of description of schemata be used as a measure of complexity. Descriptions of systems showing completely regular, highly ordered, patterns of behavior would be low in informational content (since the pattern could be expressed in very few terms) while descriptions of completely random behavior would have no informational content at all (since no pattern at all can be discerned). Hence informational content and complexity are maximized in between these two extremities, at "the edge of chaos." (Bousquet 2009)

According to the theorists, this edge can be seen the maximum of production and information. Furthermore, they also argue that this area is the area of creativity:

“Complexity and adaptability are greatest at the "edge-of-chaos" where systemic structure can be retained but is also at its most flexible and creative. Such systems are best suited to responding to contingency and unpredictability.” (Bousquet 2009, 183)

“Creativity is balanced at the knife-edge between predictability and randomness. A completely ordered or completely chaotic system is not very valuable because it cannot evolve very far; it cannot improve or progress. By contrast, a system pushed far-from equilibrium to the boundary between order and chaos.” (Jencks 1995, 85).

According to the theory, with this quote, in ‘Architecture of the Jumping Universe’, Jencks underlines that chaotic systems have more possibility of creativity than linear systems. Because, it is hard to create the ‘new’ under domination, sometimes even it’s impossible. Whenever a structure needs to be formed, some percentage of irregularity is necessary for change. This relation brings a dialectic connection between order and change. In chaotic systems, while order wants to maintain itself, irregularity provokes it by holding an anarchistic attitude.

Jencks is essentially working with one duality, order versus chaos. The both and condition for this duality is complexity. Jencks describes how a higher intelligent system is one that has found the balance between order and chaos. The examples he gives are a beating heart, the brain, *Hamlet*, and poetry. All these elements are hard to truly duplicate using artificial means. Elements that are purely ordered or chaotic can be easily mimicked and derived artificially (through computation.) Jencks describes this concept further in diagram:

Figure 4.10. : "Cosmic Axiology - a formal measure of simplicity, complexity and complication" (Jencks 1995)

"Illustrated here is one value system that relates to the fundamental processes of the universe. Very simple systems, which are ordered, are to the left, very complicated systems to the right, and on the 'edge between order and chaos' are systems, which extract higher levels of organization from both order and chaos. The argument of this book is that higher organizational states, and the direction of evolution, are 'better' than both very ordered and chaotic systems." (Figure 4.10.)

-Charles Jencks (Jencks 1995)

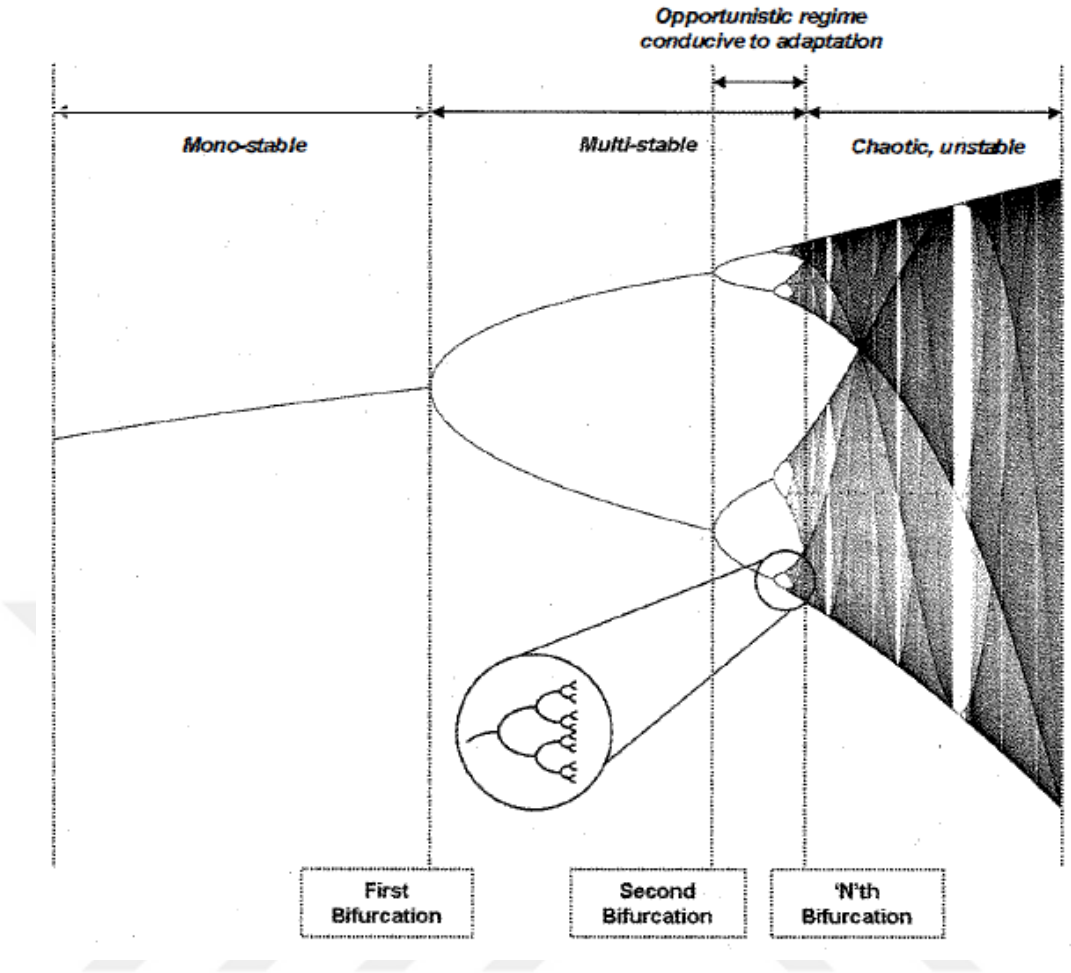


Figure 4.11. : Bifurcation diagram of a non-linear system (Boeing 2016)

When we look at a bifurcation diagram, such as the one shown Figure 4.11, we can see the distances between successive bifurcations getting smaller and smaller in a geometric way (along the horizontal axis).

Building on the discoveries of chaos theory, complexity theorists claim that it is at frontier of the phenomena of chaos, the "narrow domain between frozen constancy and chaotic turbulence," that the most complex and adaptive structures can be found (Heyligen 1996). In the gap between the two determinisms (chance and necessity), the two most important things in the universe emerge: life and mind. That is why the concept is central in Complexity Theory, and why it is the Holy Grail at the Sante Fe Institute, New Mexico. The theorists there have any number of models that show the great significance of this boundary between very ordered systems and very chaotic ones (Jencks 1995, 89). Parallel with Jencks, Kauffman thinks that “Networks in the regime near the edge of chaos - this compromise between order and surprise - appear

best able to coordinate complex activities and best able to evolve as well" (Kauffman 1995).

Right in between the two extremes [of order and chaos], at a kind of abstract phase transition called "the edge of chaos", you also find complexity: a class of behaviors in which the components of the system never quite lock into place, yet never quite dissolve into turbulence, either. "These are the systems that are both stable enough to store information, and yet evanescent enough to transmit it. These are the systems that can be organized to perform complex computations, to react to the world, to be spontaneous, adaptive, and alive." (Waldrop 1992, 293). "In discussing the whole question of order, which plays a key role in creativity, it was shown that between two extremes, of simple regular orders and chaos, there is a rich new field for creativity." (Bohm ve Peat 1987, 268).

Although order seems solid in the context of time-space at first sight, actually it is not. In contrast, it requires motion including certain energy. Conversion of energy is needed even for the maintaining order. With this reason, daily life contains a hidden dynamism. As stated before, order cannot be generated randomly without an authority or power and also cannot be maintained without any support. Since it is not natural, it is only continued by the intervention of humankind. In other words, unless it is imposed by external influences, its energy decreases and it evolves to irregularity. Because of the fact that the chaos theory defends that every order tends to be destroyed; if an order keeps its existence, it can be said that there are some authorities resisting and interrupting the tendency of destruction.

Nassim Nicolas Taleb, in his book Antifragile, mentions three basic categories on earth. These are valid for people, for institutions, for societies and even for states: Strong, fragile and *Anti-fragile*. Taleb argues that many things in life can be profitable from racism, irregularity and confusion. It describes this attitude as anti-fragile and is the category of 'anti-fragile', something that needs chaos to sustain and improve its existence. Those who stumble from time to time, those who have blown on the blow, those who have recovered from behind immediately. They are not as strong as they are, because they are being toppled over. But they do not resemble fragile people because they are recovering. They are able to keep up with changing situations (Taleb 2012) (Figure 4.12.).

Figure 4.12. The Antifragile attitude on the complexity line

According to the theorists, it can be said that the edge of chaos has a promising attitude. In other words, the identity, which can be called as Anti-fragile, adopted in this field, where creativity and production potentials are the greatest, seems to us to be promising about the future. It can be said that on the threshold of the analyzes made, the reflection of this interval on the individual will also be parallel to these analyzes.

In everyday life, the anti-fragile attitude adopted in this area gives rise to an attitude that can 'look inside from the inside, and be aware that the process of its dynamics can emerge from within itself'. As Acker-Hocevar and Snyder emphasizes; "Living on the edge of chaos is where transformational change happens; the leaders of tomorrow will need to be those who thrive in its context and demonstrate confidence in facilitating the direction and quality of change." (Snyder, Acker-Hocevar ve Snyder 2008, 91).

In addition to these deductions, the 'anti-fragile' can be evaluated by following features of the identity which Gegeoğlu and Aydınlı states; critical stance that can be summed up as an attitude that can evaluate together theory and practice as separate productions (Gegeoğlu ve Aydınlı 2014).

5. BUTTERFLY EFFECT OF 'TO CONSTRUCT TO DESTRUCT'

Architecture, which is a building art and art that points to the decoration of the space and the work and the beautification, is a thought and imagination sign and a symbol of civilization. As Turgut Cansever has emphasized elaborately, an architectural worldview is projection of beliefs, values and imagery. "Architecture is the discipline that regulates the relationship between man and being, material, organic, spiritual and intellectual in all entities and layers. In addition to technological, economic and political problems, it covers the entire human mind. Architecture is a civilization narrator, a civilization document." (Cansever 2016).

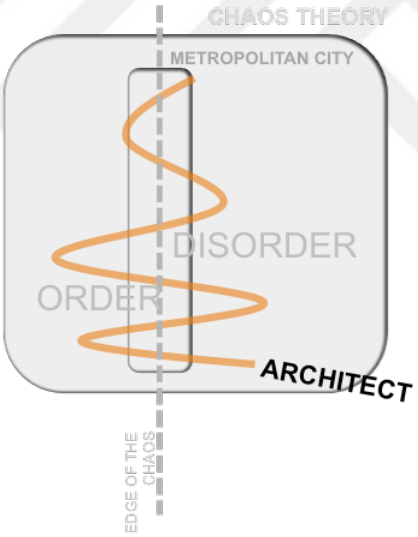


Figure 5.1. : The diagram of the architect on the complexity line

Architecture has a potential not only as a product created by the dynamics of the society but also shaping the society and its dynamics as well (Figure 5.1.). Hence, it can be said that the parameters involved in the production process and any attitude adopted are potentially influential on all the dynamics to be realized. The affective situation includes not only the expert knowledge of the architect but also his individual look and desires. In this context, the architect's figure can be found not only with his expertise, but also with his own urban consciousness and production process.

In other words, it is possible that the architect can develop a way of looking at an 'individual', above all, by stripping away from the 'expert' identity.

Faced with the dynamics of contemporary cities blocking conscious today, architectural production now exhibits its own reality in various forms, and the role and place of architecture is questioned. The productive nature of the architect is nourished by the rationale developed in the context of the dynamics of the consumer society. According to Gegeoğlu and Aydınlı, this posture can define itself through an internal reckoning of the form of production originating from the nature of creativity and production. Recognizing that architecture is at the expense of consumption, it is necessary to be able to develop a new stance in order to sustain architectural production without entering a blasé attitude (Gegeoğlu ve Aydınlı 2014).

Architectural action is one of the factors that make up the physical environment. However, the physical environment exists with the individual in it and gains meaning with the individual's being, that is, the meaning. According to Potur, architecture is defined by the concept of design that takes its source from human (Potur 2007). Starting out from Simmel's rhetoric; It can be argued that the modern, sensitive and exciting modern architect as an individual needs some kind of isolation in order to preserve his psychological privacy in the crowded disorder and complexity of modern life (Simmel 1950).

In the production of the space, it can be said that the boundaries of the architect for thinking and building have become increasingly solid. While technological, social, economic, cultural and structural development and transformations enable architects to acquire new tools on the other hand; they also bring architectural action into order and discipline. In the book ‘Science, Order and Creativity’, David Bohm says that general principles, values, and assumptions, which are taken in this way to have absolute necessity, are thus seen as a major source of the destructive misinformation that is polluting the generative order of society (Bohm ve Peat 1987, 237-238).

Day to day, this situation is becoming a standard; It is encountered that similar or identical things will gradually take over. It can be argued that getting the dedifferentiation gradually raises up the subjective, contradictory, complex, chaotic and opposing structure of the field of design as a result of technological and intellectual similarities. Contemporary architectural environments, which are expected to increase spatial diversity and diversity, are, on the contrary, undergoing

an inefficient process, which is more evident in the quest for negative repetitions. The bottleneck of today's architect can be expressed by Bohm's words:

"Creativity, in almost every area of life, is blocked by a wide range of rigidly held assumptions that are taken for granted by society as a whole. There is therefore an unspoken requirement that everyone must subscrifrt these assumptions, but that no one should ever mention that any such assumptions indeed exist. They are tacitly denied as operating within society, and even this denial is denied. The overall effect is to lead people to collude in "playing false" so they constantly distort all sorts of additional thoughts in order to protect these assumptions. Such bad faith enters deep into the overall generative order of society." (Bohm ve Peat 1987, 235-236).

According to Tanyeli, the architect must now abandon the all-encompassing discourse of claiming validity for everywhere, in opposition to dominance structures that cause the formation and processing of life and theoretical arrangements in everyday life. "…After that, in the frame of the specific physical, social, cultural, economic, etc. It has to produce designs that reflect the consensus reached by other social actors within the framework of their realities… Since each island will represent an opposition to the others, what is actually happening is only the reproduction of chaos. Because every compromise island that emerges, the consensus that makes other islands can be formed in the opposite identity (Tanyeli, 2013) (Figure 5.2.)

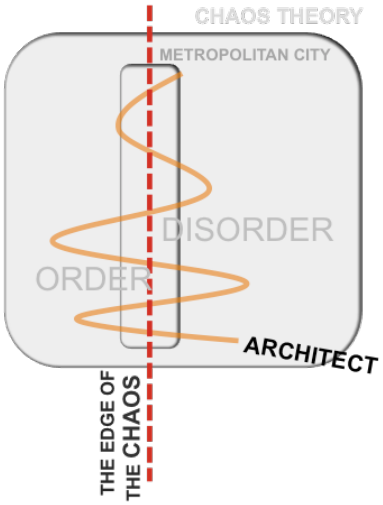


Figure 5.2. : The diagram of the architect on the edge of chaos

"If needed we work to disprove the common belief that all starts with the plan. There are forms without plans- dynamic orders and disorders."

-*Gordon Matta Clark* (Walker 2009).

The truth lying beneath the loss of the integrity in the space of the city, having large and small venues appearing in front of us more and more frequently as the symbols of this deterioration is that the paradigms considered and pursued en route to modernizing had not digressed from a certain axis. The social movements created in this line deteriorate the city and the deteriorated city increase discontent. Coming up against differences and getting in dialogue seems as the only way of making social integration possible, rather than being scared of and denying differences. If we consider that the cities that symbolized social integrity and unity against outsiders previously are disintegrating within nowadays, we can come up with the interpretation that the city is not a space that can be shared; it became a space that cannot be shared.

One of the most significant features chaos theory bases on, as a progressive science is "change". There are differences that linear and chaotic systems behave in terms of reactions on interventions. When the linear systems are exposed to change, they cannot create new shapes that are against the qualities, which form themselves because of the fact that their characteristics do not leap as chaotic systems. It is only possible that appearing of new structures or order can be provided by disappearance of old structure. This results in a chaotic system. In this regard, nothing new can arise or arrive without chaos. According to the theory, everything new deviates from a straight line or linearity. In other words, demolition means having tools that can produce new information. For example, if there was no mutation, we could not talk about the diversity of species. For example, the process that leads to the emergence of new species is mutual. Mutation is chaos. Therefore, order and chaos are like puzzles. The realization of one depends on the existence of the other (Diker ve Ökten 2009).

Although order seems solid in the context of time-space at first sight, actually it is not. In contrast, it requires motion including certain energy. Conversion of energy is needed even for the maintaining order. With this reason, daily life contains a hidden dynamism. As stated before, order cannot be generated randomly without an authority or power and also cannot be maintained without any support. Since it is not

natural, it is only continued by the intervention of humankind. In other words, unless it is imposed by external influences, its energy decreases and it evolves to irregularity. Because of the fact that the chaos theory defends that every order tends to be destroyed; if an order keeps its existence, it can be said that there are some authorities resisting and interrupting the tendency of destroying. It is necessary to have a reference point in order to be able to talk about change. In the framework of social change, this reference point corresponds to the order. In other words, the change takes place in the things that constitute social order and order.

"I am for everything that is opposed to culture.." –Jean Nouvel

(Baudrillard ve Nouvel 2002, 17)

The questioning of metropolitan city and daily life can only occupy the mind of an individual who is adopted by the principle of reflexivity. The philosophy of reflexivity refers to the effort of the social scientist to control the possible influence of his sociality on scientific activity, by objectifying the relation established between him and the research object (Bourdieu 2001, 173-174). Bourdieu's reflexivity principle seeks to refrain from the preconceptions of the social world, ideologies and stereotypical conclusions. According to this, the activities of ordinary people are so scarce to the routine and flow of daily life; there are little chance of a general inquiry.

The way ordinary people perceive and interpret the social world is determined by stereotypical stereotypes or totally subjective fictions under the influence of doxa and illusio. Ordinary people are so attached to their sense of practice that they construct their own life stories at the level of discourse to gain a practical meaning, continuity and integrity (Bourdieu 1986). After all, everything that the social world produces can be destroyed by the social world once it is known by the right way (Bourdieu 1993).

Despite the fact that the concept of reflexivity was defined with modernism, it has been perceived insufficiently. Modernity has supported the approach of blurred identity. Besides, it has seen as anti-culture, negating culture or destroying of tradition. However, Berman says that modernity has not been interested in building the new world while destroying the traditional values. Although modernism has been

a password representing the power of contumacy, it has ignored and excluded most of the things.

As ardently as Marx, Nietsche asserts his faith in a new kind of man-"the man of tomorrow and the day after tomorrow"-who, "standing in opposition to his today," will have the courage and imagination to "create new values" that modern. Men and women need to steer their way through the perilous infinities in which they live (Berman 1982, 23) This new individual is the independent individual desiring to construct his/her future by himself/herself. He/she is the person standing against dogmatic knowledge and he/she is always in search of new. He/she is different from the individual who is mechanized in the dictation, objectivity and rational processes of modern life. Baudelaire describes the new person in the 'Painter of Modern Life' as follows: “His passion and his profession is to merge with the crowd. For the perfect idler, for the passionate observer it becomes an immense source of enjoyment to establish his dwelling in the throng, in the ebb and flow, the bustle, the fleeting and the infinite. To be away from home and yet to feel at home anywhere; to see the world, to be at the very center of the world, and yet to be unseen of the world, such are some of the minor pleasures of those independent, intense and impartial spirits, who do not lend themselves easily to linguistic definitions. The observer is a prince enjoying his incognito wherever he goes.” (Baudelaire 2010).

“What does he expect of the painter of modern life? That he should embrace the hostile crowd, contemplate the 'stone landscapes' of great cities as though they were a new nature at the heart of art and artifice, that he should perceive the eternal in the transitory, and above all in the most fleeting of moments. He wants the artist to confront the everyday - and even if necessary to tear through it to reveal the living spirit enshrouded within, not above, or beyond, but within - and in doing so to liberate something strange, mysterious and bizarre…” (Lefebvre 2010, 107).

Chaos is only embraced by art. The fundamentals of being creative mind hide in dynamic, fluid, changeable and unpredictable emotions of a human being. Creative thinking defends demolition of existing rules. In this regard, the chaotic mind is the tool of demolition. Creative thinking is messy. A successful result can only be achieved when creative thinking disciplines, chaotic dynamism within mental life, desires are combined.

Artun speaks of Baudelaire's strategy of dominating art against evil in the presentation of the artist of modern life. According to him, art can resist disturbing beauty by distilling beauty from the evil of nature. He seizes the evil and rebuilds it. He is conscious evil; It's for the good, The Flowers of Evil. “The artist deliberately commits a crime, rebuking the gods and the orders of society by sinning. It is liberated on this count and builds its own supernatural / transcendental morality. It is neither divine nor social, individual and unique. However, the nature inside me is the opposite of being rare and elegant, it is everyone. Eat like everyone, sleep like everyone, madness like everyone else!” (Artun 2003, 62-63).

Internal harmony is only possible owing to creative thinking. The people/society can’t produce the new without that. So, every society needs art/artist in order to transform chaos to newness’. Self-improvement needs creative thinking to understand and conceive the life. If we are aware of the chaos within us, we have the chance of creativity, which we can use. Thus, we will be able to use that through its intellectual and semantic face. Boyd advocates taking apart existing frameworks and reconstructing new ones through a perpetually ongoing process of "destruction and creation": “People using theories or systems evolved from a variety of information will find it increasingly difficult and ultimately impossible to interact with and comprehend phenomena or systems that move increasingly beyond and away from that variety -that is, they will become more and more isolated from that which they are trying to observe or deal with, unless they exploit the new variety to modify their theories/systems or create new theories/systems.” (Bousquet, 2009).

Thinking contemporary- thinking at future- even thinking above future is needed in order to produce real artworks. All these are related to the speed of our chaotic mental structure. Like a whirlpool, our chaotic world will move us to different, plain and new spiritual depths through the creative power.

We observe that the Chaos Theory brings us to a key concept with the interaction of the concepts that we have encountered. This new concept is “awareness”. Awareness is based on the word wary or aware, meaning "watchfulness" or "heedfulness." The term sensitive awareness suggests the image of a person who is very watchful and perceptive and therefore disposed to respond even to the subtlest impressions of all kinds. Such watchfulness may, for example, be precipitated by the presence of danger. This sensitivity is not, however, primarily concerned with already organized

knowledge. Rather it responds to subtle differences, similarities, and relationships in impressions from sense organs, muscular movements, reactions, feelings, and thoughts, and in "ratios" of all kinds, both material and mental. (Bohm ve Peat 1987, 212) In order for the metropolitan life to discover novelties and to produce positive values, we should be able to take a look at the metropolises from outside. It could also be argued that this is only going to be possible through metropolises with awareness. Awareness is a kind of key; a key that could put together the experiences it gains through the residents of the metropolis and turn them into a production activity. Awareness against the consuming and monotonic system of the metropolis could be a tool to bring in color and energy to the daily life of the exasperated metropolis resident description of Simmel. Such awareness bears the potential of realizing transformation not on an individual scale, but also on a social scale.

“In order for people, whatever their class, to survive in modern society, their personalities must take on the fluid and open form of this society. Modern men and women must learn to yearn for change: not merely to be open to changes in their personal and social lives, but positively to demand them, actively to seek them out and carry them through. They must learn not to long nostalgically for the ‘fixed, fast-frozen relationships’ of the real or fantasized past, but to delight in mobility, to thrive on renewal, to look forward to future developments in their conditions of life and their relations with their fellow men.” (Berman 1982, 95-96).

According to the metaphor of butterfly effect, every factor impacting on the system can result in huge changes. Since chaos theory defends that every dynamic system should be considered as a whole system, all pieces may affect each other from the smallest to the largest. The magnetic relation of order and irregularity is similar to the relation between metropolitan city and its mental structure. In this context, the examination here is about how the interventions that create butterfly effect. In other words, this examination is about whether the change is possible with doxa, which is the equivalent of order in the chaotic structure of city. The change that society has been through in a cultural layer is directly related to the forming of city. Daily life forms, changes and transforms daily spaces. Therefore, the change and transformation in the physical layer of city can affect all the qualities of city by creating butterfly effect.

The problem field of architecture can be found in ‘doxa’. A qualified architectural product is the visual presentation of collapsing doxa. An architect can reach beyond the normative pattern with the destruction of doxa, which affects architecture. The power of destruction, which can be generated by the intellectual and physical process of an architect, actually exist in daily life. In this context, an architect, who is affected by the doxa of cities since the birth, should search for marginal ideas.

“We can find some guiding principles that will refine the city's evolution by clearly understanding the reciprocal link between the domination of the city and our perceptual processes.” (Kepes 1996). So, Doxa existing as a sociological phenomenon in city shows that the intervention needed is only possible by defining a sociological reference. When trying to interfere to city through chaos theory, it is realized that analyzing the social powers which dominate and manage the society are the main concern that one needs to pay attention. Doxa providing the continuity of society can only be altered with a destructive thinking. Therefore, the only thing that the linear, static and solid structure of doxa cannot resist on is ‘awareness’. Consequently, the butterfly effect created by citizen model whose doxa are interrupted can impact positively on the layers of city.

Baudelaire has seen the possibility of overcoming the cultural forces we have drawn in the modern city. The modern city could turn mankind out, not inside. The power of the people of the city to re-orient in this way was in its diversity, people could find out that when they encountered differences at least they could step outside of themselves (Sennett 1990). Within this framework, a discussion can be generated about the chaotic, dynamic and transformative sides of cities with the help of the complexity theory, the detailed reading of the layers of metropolitan cities, and using the arguments about doxa and architecture. Every intervention on doxa can be transformed into spatial intervention within the context of cities structure. Consequently, according to the theory, a new way looking of the architect can be seen as a tool to change physical structure of the cities (Figure 5.3.).

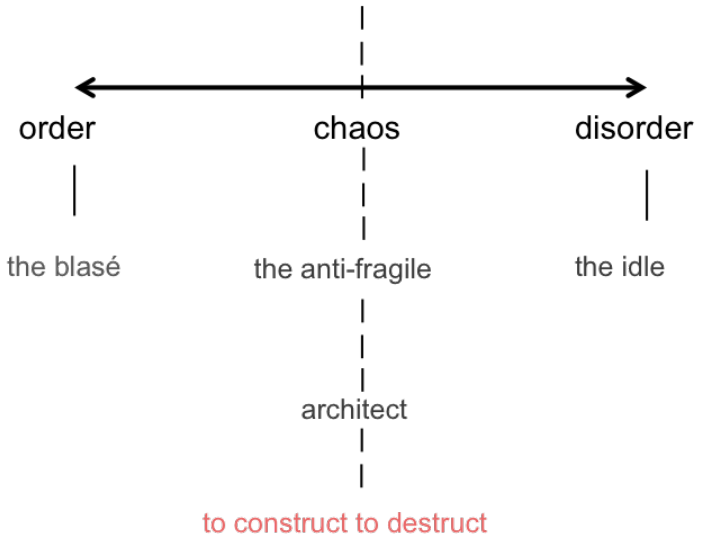


Figure 5.3. : To construct to destruct on the complexity line

According to Bohm; “A very important question is that of how this new order of creativity can ever get started. For both individually and socially, consciousness is rigidly conditioned- by a host of assumptions that lead to their own concealment through false play. In the resulting confusion and illusion, the mind is not even able to be aware of these assumptions, or to give proper attention to them. Various ways have already been suggested in which the mind may be able to "loosen" some of these assumptions. The essential point, however, is that *any* kind of free movement of the mind creates the opportunity for revealing and loosening the rigid assumptions that block creativity.” (Bohm ve Peat 1987, 267).

Sennett, in The Conscience of the Eye: The Design and Social Life of Cities, states that the city must be a school that teaches how to live a focused life. According to him, we will open up to others and learn how to weigh what important and what is not important. We need to see the differences on the street and in other people not as a threat or an emotional call but as things to be seen. These differences are necessary for us to learn to maintain both the individual and the common life in a balanced way (Sennett 1990).

The stance against this fear of opening can be expressed by the words of Bohm and Peat: “It can be summed here it should be noted that this blockage is never total, for everyone has some areas that are still open to free and honest inquiry, in spite of the effects of a lifetime of conditioning in a society that generally discourages creativity.

It is therefore important to discover where these areas are. Wherever a person finds that he or she can be creative, this will be a good starting point." (Bohm ve Peat 1987, 267). Therefore, they liken the order created by the society to a kind of pollution, which is constantly pouring into its current. It is useless to try to clean the remote pollution as the source of your pollution continues to be contaminated continuously. The important thing is to stop the source.

6. CONCLUSION

"The science studying complex, self-organizing systems and networks is still in its infancy. Yet, it already provides us with a powerful new perspective and a number of promising conceptual and modeling tools for understanding the complex phenomena that surround us, including organisms, the internet, ecosystems, markets and communities." (Heylighen 2009).

Living in a complex universe, the last century have been witnessed many searches studying to explain the ways of cosmos' working. Through Chaos theory, one of the most popular complexity searches in last decades, it seemed possible to create a discussion field bringing various disciplines together especially architecture. In other words, it can be said that it is possible to redefine itself by feeding from a mathematical theory of architecture in the rich environment we have in terms of disciplines. On account of the philosophy of the theory, it would be insufficient to handle this subject by just a few of disciplines and phenomena. In the context of these aims, due to the fact that the theory is a progressive science, we needed to look at city with a wide perspective involving even the historical processes and sociological/spatial dynamics. The spatial structure of city is not only related to the architectural phenomena of it but also sociological features of city, which have significant roles in the study. Owing to being a complex atmosphere of metropolitan city, we needed to expose the order of this kind of settlement. Since a city has an entire system with its sociological and spatial formation, therefore, it has been realized that a city has a stratificated order which any of the layers cannot be considered without each other.

It can be said that the inferences obtained in the research are directed at the debate on the relation between the city/architect and order-disorder. Even if it cannot be pinpoint certain results, it is assumed that the architecture is moving towards a darker urban table. In this context, this debate is based on the search of utterly different approaches of city/architecture. It gives us hope that even the determination of how

the architect is directed to the present situation will come, without revealing the social and spatial constraints of the metropolitan city and thus the architect of today, or without offering convincing solutions.

As the general character qualities and behaviors of the individual are so dependent, how can the basic questioning area between city-architecture-space-individual be improved? This is, in fact, a search for the way in which the individual acquires an area of freedom, an independent way of thinking, despite all intimidation. What intervention can change the fate of the citizen, the space and the city in the context of this four? How can a city get a different content with a touch? How can the layout be redirected to a different content?

The most important platform for architects to gain this mental background is education. The field of education is the first place that architecture is able to direct, illuminate, define itself and stimulate the environment and future. The ability to produce alternatives, protect alternatives, and apply them independently of events that dominate the city must be transferred to the city through mental and physical methods acquired in the field of education.

The creation of an architect identity is accomplished primarily through the awareness of physical or mental problems, the application of design attitude in the process followed by problem-oriented analysis, and finally the ability to introduce a new expression or definition of probing. Peter Bahrens sees architecture as the leader of a group of cultural elites who can produce the formal products required by the social order. According to him, architects are founders of order. In this context, education is becoming one of the most important parts of order building. As a result, arts and education channels can help architects dive into chaos by taking the risk of confrontation with chaos, enabling them to produce new products for the future independently of dogmatic, static, and linear events.

The final piece of Deleuze and Guattari's, What is Philosophy? begins with the following sentence: "We require just a little order to protect us from chaos." (Deleuze ve Guattari 1991, 200). We see that together with the studies made, there is a definition of chaos, a combination of spatially undifferentiated, non-specific form of everyday life, and a perception expressing danger. In scientific use, chaos emerges as a transcendent order in a dimension that the human mind cannot perceive. With this point of view, it is seen that the nonlinearity of nature is tried to be restrained by

an artificial order produced by mankind. This order refers to a secure spatial unity established by certain forms, means and laws. To put it differently, as Deleuze and Guattari states, the chaos dominating to nature occurs as utterly different from nature in an approach of order with the society at city scale. Chaos cooperates with man-made order so that society survives and keeps its daily life the same.

Christopher Alexander explains that the living structure is generated from the centers as a whole. Primarily it is necessary to explain the center and a whole in order to be able to understand how life originates from them (Petruševski 2012). As Alexander argues, if it is assumed that city is a living organism, it can be imagined that the horizontal and vertical strata move in unison with each other. As mentioned earlier, it can be said that these codes correspond to the Doxas that keep the city alive by directing the mental structure of the society.

"Artists struggle less against chaos (that, in a certain manner, all their wishes summon forth) than against the "clichés" of opinion."

-Gilles Deleuze, Felix guattari (Deleuze ve Guattari 1991, 204).

In the scope of the study, although the individual views have been handled very carefully, it is difficult to argue at this point in the study that is easier to answer question, 'Where will the evolution of the views of today's architecture go?' But within the derived conclusions, striking results can be achieved today. The task of dominating the earth, where human beings are part of it to the most micro places today is very clearly confronted on the urban level. According to Deleuze, who criticizes the thought that excludes randomness and chaos on behalf of order, this system of thinking is trustworthy for individual. In this sense, as Deleuze and Guattari point out, being in certain, definite, rigid and static mental frameworks are almost like an umbrella protecting us. (Deleuze ve Guattari 1991). Along with the assumption that the domination/order is an attitude toward chaos, the free space perception of the city/citizen is becoming questionable. Today, the reality of the spatial organizations presents a tragic debate.

"Thus, lacking the real, it is there that we must aim at order." – Jean Baudrillard

(Baudrillard 1994, 16).

It is very clear that today, on the urban level, human beings are a part of themselves, and that the task of dominating the earth to the most micro locations is very clear.

According to Deleuze, this system of thought is like an umbrella protecting the aggression, which contradicts the chaos in the name of order and criticizes the idea of excluding coincidence and having a coherent opinion. In this sense, being within specific, definite, rigid and static mental frameworks is like an umbrella that protects us, in fact, as Deleuze and Guattari stated (Deleuze ve Guattari 1991). Along with the assumption that domination/Doxa is an attitude toward chaos, the free space perception of the city/citizen is becoming questionable. The realities of the spatial organizations we are present today present a tragic debate environment.

"To make that world speak to us, we must, as it were, make its silences audible: to spell out what that world was unaware of. We must commit an act of violence: force that world to take a stance on issues to which it remained oblivious, and thus dismiss or bypass that oblivion that made it that world, a world so different and so incommunicado with our own. The attempt to communicate will defy its purpose. In this process of forced conversion, we shall render the hope of communication more remote still. In the end, instead of reconstructing that `other world', we shall no more than construe `the other' of the world of our own." (Bauman 1991, 5).

Within the scope of the study, it seems that the search for order of the society has come from the intolerance to the other. It is though that the society is preventing ambiguity by organizing itself in oppositions. According to Bauman, this attitude can only come to an end when tolerance for differences begins. In this context, the state of being on the edge of chaos represents the ability to produce a new order between irregularity and strict order. New products, new behaviors, policies, strategic positions can be developed with this way of seeing. It is observed that the Chaos Theory brings us to a key concept with the interaction of the concepts that has been encountered. This new concept is "*to construct to destruct*". In order for the metropolitan life to discover novelties and to produce positive values, the architect should be able to take a look at the metropolises from outside. It could also be argued that this is only going to be possible through metropolitan cities with this approach. This is a kind of key that could put the experiences together; it gains through the residents of the metropolis and turns them into a production activity. Awareness of this approach against the consuming and monotonic system of the metropolis could be a tool to bring in color and energy to the daily life of the exasperated metropolis

resident description of Simmel. Such awareness bears the potential of realizing transformation not on individual scale, but also on social scale.

After the analysis and the proposed ideas, it can be imagined that the probability of today's architecture to turn into more disturbing geographies in the near future is quite high. But within the scope of the processes and situations that have been achieved, thanks to the butterfly effect approach, which is the basic metaphor of the Chaos theory, the transformation of the chaotic structure of the city in its historical process allows us to make promising conclusions about the architect and architecture today.

In regards to the Chaos Theory, it could be said that it is possible to create changes in social relationships through the use of powers of small magnitudes. Within the scope of this philosophy, any interference to the spatial Doxas dominating the life style of the individual, through very simple and small touches, could transform into spatial interferences in an urban scale. Within this framework, it could be argued with this theory that the architect contains within himself the potential to alter the physical structure, that is to say the spatial integrity of the city. Ultimately, a change in ideology or identity has the potential to translate into tangible changes with the environment.

Doxa's definition of the existence of the city as a sociological phenomenon shows that the intervention is possible only by taking a sociological reference point. When trying to make a social intervention through the theory of chaos, it is noticed that the most important thing to focus on is the analysis of the social forces that guided and inspected and controlled the society. Therefore, changes and transformations in social structure, one of the main layers of the city, can actually affect all the qualities of the city, creating a butterfly effect. In this context, it is possible that the butterfly effects which can be created by the citizen have positive effects on the layers of the city. Moreover, they are thought to be able to create different-specific urban spaces in the context of architectural-spatial transformations or productions.

“I want to insist that architects are intellectuals first and foremost. Architects are not builders. They are spokes. They do not make concrete objects. They make speeches on objects.” (Wigley 2002, 122). It is increasingly difficult to describe the city, which has changed beyond the human perception scale, during the period of globalization. To know the city, there is no longer a definite prescription to fit a

single definition. It would be appropriate to have a perspective from the social, political and economic framework, to establish relationships from this perspective, to ask questions with this approach, to try to understand the complexity of space and space and the nature of this complexity produced by the multitudes / all others in the process of evaluation of city and city architecture (Uluengin 2011).

"We cannot plan an artificial world that completely excludes it or isolate ourselves in a cocoon designed to fit our model, but we can choose to live in harmony with nature and its laws. We can plan a way of interacting with the innate creativity of the systems of which we are part. We can even decide whether or not we agree with those laws and act to save natural cycles or to irreversibly impair them. We can choose order or chaos." (Pulselli ve Tiezzi 2009, 2).

It is seen in the context of Jencks' discourse that creativity exists at the boundary between chaos and order, the edge of chaos is the moment/region that existing order can be destructed and new notions can be constructed by taking advantage of the unpredictable and random structure of chaos. It is necessary to read metropolitan imagery at a certain distance and to leave some of us out of our inner life. The spaces that reproduce the metropolitan life can acquire more human forms when they give away each other only by observing each other's specific goals, and when they keep close contact with life, people, artistic sensitivity to nature. At this point, relations can be reestablished with more positive values. Hence, today's architect can reach this limit at which he can remove the system of order from its dominance and bring a new expression or definition of use against the problem. Today's architect can help to fall into chaos by taking the risk of confrontation with chaos and can make new productions towards the future independent of dogmatic, static and linear phenomena. Consequently, all the inquiries and analyzes made in this context can be expressed by Deleuze and Guattari; "*Art indeed struggles with chaos, but it does so in order to bring forth a vision that illuminates it for an instant, a sensation*." (Deleuze ve Guattari 1991).

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- **Koç, Ç**., Sönmez, M., 2017. The Architect of Today on the Edge of Chaos; An Approach Through the Chaos Theory, *Gazi University Journal of Science Part B: Art, Humanities, Design and Planning,* 5(1), 1-7.
- **Koç, Ç**., Sönmez, M., 2017. The Architect of Today on the Edge of Chaos; An Approach Through the Chaos Theory, Livenarch: 5th International Congress, September 28-30, Trabzon, Turkey.

OTHER PRESENTATIONS:

- **Koç, Ç**., Sağlam, H., 2015. The Effect Of The Education Models On Primary School Structures From The Early Years Of The Republic To Present. 9th International Technology, Education and Development Conference, March 2-4, Madrid, Spain.