

## RESEARCH ARTICLE

# CHAOS THEORY: A NEW PERSPECTIVE IN APPROACHING COMPLEX ACTIONABILITY, CULTURE, CIVILIZATION, AND CULTURAL DIVERSITY <sup>1</sup>

### *Part II: Disorder created by the Order Perception*

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### ABSTRACT

The perception of order and disorder has been the most mysterious part of mankind's thousands of years of existential struggle. After becoming a social entity, humans have always desired to live within an order. However, every established order has ended in some way. Every state, every empire has settled into the dusty leaves of history. In other words, when we look at history and civilizations clearly, it turns out that order cannot actually maintain its existence forever. Therefore, the approach that there is no real order but there is an order within disorder will yield better results. This can only be possible by looking at history, civilizations, and cultures through the details of Chaos Theory.

In the article, the principles of Chaos Theory are examined through the perception of order and disorder, and historical and intercultural relationships and conflicts are attempted to be studied according to the principles of the theory. In the study, an analytical examination at the theoretical level is conducted, and it is discussed how Chaos Theory will shape the civilizations and cultures of today's and tomorrow's world. In this context, it has been attempted to demonstrate that the theory has now shattered the past perception of order and that all societies are shaped by the perception of order within disorder.

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## Introduction

In the first part of the paper, Chaos Theory and Karma structures were introduced, based on the imbalance created by the perception of order. Now, in the second part of the paper, the main principles of Chaos Theory and the irregular structure of societies will be examined and the connection between disorder and Karma within the order will be investigated.

The relationship between Karma and the principles of Chaos theory is quite clear. Humans are constantly conscious beings engaged in actions. The reactions arising from their actions become Karma for them, and at the same time, they have direct or indirect effects on others. Each individual is unique, which also makes their actions unique. Consequently, unique actions emerge at any moment, and their karmic reactions occur with uncertain and irregular timings. As mentioned in the first section, when humans transitioned into society, those who governed them also pursued order. The greatest fear for the kings and emperors of countries was the emergence of chaos that could render them powerless. However, regardless of their efforts and precautions, their kingdoms and empires remained in balance for certain periods and then returned to the first proposition of chaos theory, which is the complete dependence on initial conditions, emphasizing that disorder is the main element. Looking back in history, no empire or kingdom has been seen to stand indefinitely. In today's conditions, with the rapid development of technology in various fields, especially in communication and transportation, it is evident that any system anchored to the logic of order is quite fragile.

Another point is that the identity-based cultural ties inherent in the characteristics of Homo sapiens create disorder in the way people perceive good and evil. Personal and collective actions that may seem normal to some societies are considered very bad behavior by others. Therefore, there is a kind of disorder in the impact force of Karma. Ultimately, every system created by humans has an action-based disorderly karmic structure. This leads us to another proposition, which is that no event repeats in the same way.

In terms of the connection between Chaos theory and Karma, one of the most important principles is the "Butterfly Effect." To understand the relationship between the Butterfly Effect and Karma, it would be appropriate to understand the significance of this effect. The namesake of the "Butterfly Effect," which is one of the foundations of Chaos theory and closely related to Karma, is Edward Lorenz, a meteorologist. In 1967, when he wanted to conduct a weather forecasting simulation on what could be considered the most advanced computers of the time, the underlying idea was to establish an order in which weather conditions could be predicted according to Newtonian mechanics. After numerous studies, he made a tiny data change that was so small that it would not even be considered in the data (he used 0.762 instead of 0.762815). However, this very small data change unexpectedly led to significant changes in the simulation's results. Lorenz delved into the idea that this small change could have major consequences and presented this topic as a scientific article. He named it the Butterfly Effect and coined the slogan, "A butterfly flapping its wings in the Amazon could set off a tornado in the Atlantic." In fact, it was not a deeply thought-out slogan, but it became such a powerful expression that it could inspire future centuries (Lorenz, 1993,p. 126).

Of course, according to Lorenz's statement, it was not possible for a butterfly's wing flap to cause a tornado in the Atlantic. However, the point being made here was that a small change so imperceptible to the main system could lead to significant changes in subsystems and, through interactions between systems, could eventually result in much larger changes in the future. However, Lorenz's paper remained only in meteorology science journals. Years later, those involved in theoretical physics stumbled upon this article when they were searching for solutions to the theory, and they began to establish the mathematical and physical foundations of Chaos theory. Subsequently, Chaos theory found its place in economics, religion, philosophy, history, and various other fields. Now let's look at the Butterfly Effect from the perspective of Karma.

As mentioned earlier, the foundation of Karma is based on our actions and the reactions that arise from these actions. Human beings carry out their actions throughout their lives, shaped by the cultural elements they have acquired, combined with their free will. This makes their actions disorderly, unpredictable, and uncontrollable, just like themselves. Therefore, the consequences also occur as unpredictably as their actions. All systems created by humans, from families to companies to governments, share these same action-based characteristics.

In this context, humans are greatly influenced in two areas: the effects of their own actions and the effects of others' actions reflected upon them. Furthermore, as mentioned earlier, a person grows up within the culture and moral elements introduced by the system in which they were born and transforms into a conscious being. Culture is the primary factor that differentiates the behaviors of societies from one another. Therefore, subjective concepts such as good and bad, right and wrong become relative. In other words, a behavior or perception that may be considered very wrong in one society may not be as wrong in another. This means that all artificial systems created by humans are in a chaotic state of action, can produce unexpected effects, and, even if they remain in balance for a short period, will eventually transition into disorder.

The Butterfly Effect, on the other hand, refers to the influence of certain actions that the main system does not perceive, affecting the subsystems in an unknown time frame, growing, and becoming a problem for the main system (sometimes leading to unexpected positive developments). Providing examples on both individual and state levels will help us better understand what is being expressed here.

For example, Hitler coming to power in Germany in 1933 and subsequently leading the world into a world war, resulting in the deaths of millions of people, is not a Butterfly Effect. The Butterfly Effect in this case dates back to earlier events. Austrian Adolf's youth coincided with World War I, and he was wounded in the leg during the war, rendering him unfit for further military service. In the subsequent years, despite being an ardent supporter of Germany, he could not become a German citizen. In 1930, he founded his party in Germany with a large following, but due to his lack of German citizenship, he could not participate in elections. A formal maneuver was required for this, and the Minister of Internal Affairs of the Duchy of Brunswick, a separate small state in Germany at the time, came to his rescue. By appointing him as the firebrand to Berlin, Hitler automatically became a German citizen and was able to run in the elections. Here, the Butterfly Effect is the action taken by the Minister of Internal Affairs. This person carried out an action that did not directly affect the main system. However, it paved the way for Hitler's unstoppable rise. Nine years later, Hitler, with the support of the masses, would paint the world in blood for five years.

When we look at Chaos theory from the perspective of societies, we can see that they also create Butterfly Effects. Let's provide an example of this.

After being discovered by Columbus in the mid-15th century, the American continent, though unaware itself saw an influx of Europeans who established a capitalist trade system and killed the indigenous peoples while bringing tons of gold

back to Europe. Their actions were very, very bad in a way that went against the moral values of every society. In other words, their actions were bad, and the consequences would be bad as well. However, how and when? That was uncertain. When Europeans went to the new continent, they unknowingly created a Butterfly Effect. They brought with them a hidden enemy to these lands: the common but non-lethal flu virus in Europe! The indigenous people of the new continent were defenceless against this virus, and as many of them fell ill and died from it as were killed by Europeans.

However, over centuries, this virus underwent changes. It adapted to the characteristics of the tropical climate. While the residents here found a way to protect themselves, the evolved virus eventually spread first to Europe and then to India via the spice route. It couldn't find a suitable environment for its spread until the devastation of World War I. But suddenly, in the first half of the 19th century, it emerged. It was called the "Spanish Flu," and it reached almost every corner of the Asian continent where it had not yet reached, killing twenty million people. This is an example of a societal Butterfly Effect!

Indeed, there is another good example that is quite similar. Around 300 BC, a deadly virus appeared in the Nile Delta. The Black Death! The plague remained in the coastal regions of North Africa for a long time. However, Asian states that were determined to conquer these lands encountered the plague in the Nile Delta and carried the virus to their continents. The plague settled in Asia with the soldiers of invading groups and the captives they took, and it began mass killings in Central Asia for the first time around 250 BC. After about 50 years, Alexander the Great arrived in these lands, and among the spoils of war were soldiers infected with the plague. These soldiers were sent to Greece. These individuals were ruthlessly exploited to create great works, but the plague manifested itself here as well, resulting in the "Plague of Athens," which would go down in history as the greatest calamity. Thousands of people died in a very short period of time, and it was no longer possible to stop the plague. The entire European continent was affected by this.

As you can see, the Butterfly Effect is a central element of chaos theory, just as it is a central element of karma. Therefore, every individual can easily engage in actions with their free will. But the important thing to note is whether the actions have the potential to create a Butterfly Effect.

Actions do not necessarily have to physically occur. Advising someone or giving advice to someone at a crossroads in a project is also a kind of Butterfly Effect. This effect is not necessarily a bad one. A simple action in the past can lead to very positive

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developments in the future. However, the real issue is how an individual in a chaotic structure will act. Our actions often become significant through the decisions we make in the face of developments or situations. This brings us to the point of examining the other principles of chaos theory.

There are two important points to note here. First, at a certain point in time, the actions of individuals or societies are actually so small that they will not affect the main system. In fact, they are so small that it is not even possible to notice them. However, in the future, these actions will have or will have had significant effects. Second, these actions that do not affect the main system lead to unpredictable developments. Hitler's being a German citizen was seen as important at the time in terms of his party's elections and him becoming its leader. It is likely that many of those who voted for the party did not want a new world war. They were simply those who longed for Germany's return to prosperity. But this simple maneuver had led to unexpected results.

Similarly, the Americas were important for the wealth they could provide. However, a completely different result emerged that caused the deaths of millions. Therefore, when looked at from the perspective of Newtonian mechanics, the idea that the causes of the past are the reasons for future developments is proven wrong. This is because actions that begin with the unpredictability principle of chaos theory create a Butterfly Effect. Systems are established within an order. Even though the capitalist system grew further with the valuable materials brought from the Americas, this balance was temporary, and the system collapsed with the great wars and the subsequent Spanish flu disasters.

On the other hand, when Western capitalist countries are considered, their actions of making the world into colonies and sharing it have created a huge karma in terms of actions. After the wars, the collapsing capitalist system created a completely disorderly environment in the world, and as a result, the period of "decolonization," which is the independence of colonies, began, and the bad actions of the West came back to haunt them.

All unnatural structures create a chaotic situation. Perhaps the most important principle of chaos theory is that these structures have the property of determining their behavior, performance, and processes of growth and dissolution and controlling time. This is called "Entropy." Entropy is the main element of chaos theory. First, it is appropriate to learn what this concept means and then delve into its philosophical dimension from the perspective of individuals and society.

Entropy is one of the four laws of thermodynamics that guide all modern physical and mathematical systems. The laws, without going into explanations of physics, chemistry, and mathematical explanations, are briefly as follows: "The amount of energy unique to the creation of the universe is constant. Energy cannot be created or destroyed, and energy is always moving from more to less to create balance. Energy moves in one direction, decaying, i.e., changing form. This is 'entropy'."

Entropy is defined as the process in which the fixed amount of energy in the universe is used up, causing a change in form and the release of unusable energy. In short, everything in the universe is material and contains energy. Every material is active, and the actions occurring at any given moment transfer some of its energy to another area. As a result, matter undergoes a process of decay over time.

What does this mean? In simple terms, a human is born, grows, ages, and dies. From an energy perspective, during this process, they use up their expendable energy, and eventually, their energy is transformed into another form, becoming "spent energy." Entropy is inevitable and has a beautiful explanation:

**"You can't win,  
You can't tie,  
You can't leave the game."**

As seen, entropy is inevitable. It cannot be stopped. However, it can be slowed down by conserving energy. Therefore, entropy is the master of time. When we consider that everything is in action and that the foundation of action is energy, it becomes clear that energy is the most important component for the matter to preserve its existence within the assigned time. Therefore, entropy is the main element of thermodynamics, chaos theory, and, as we will discuss in detail later, karma.

Before moving on to the human and societal aspects, it is important to understand how entropy operates according to physical laws. Firstly, as the master of time, every material deteriorates (actually transforms energetically) through entropy. The state of equilibrium in the movement of energy is critical. In other words, heat tends to move towards cold, and this continues until the temperature on both sides becomes equal. This shows us another characteristic of entropy: a larger force moves some of its force toward the smaller one. Material uses its energy to go through its life cycle and eventually becomes unusable. This is often referred to as material death in our human way of thinking, but it is, in fact, a change of energy.

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From the perspective of chaos theory, we can see that the description of order within disorder aligns perfectly with entropy. This is because we see that every part of the universe is an energy and that it progresses with the logic that, although it may seem disorderly to us, it is based on a truly magnificent order. When we operate with the logic that every material undergoes decay, transforming its energy from its own structure into another form, we can say that the future is being rewritten at every moment. Subsystems within the universal system constantly experience energy decrease and increase, meaning that energy flows from some areas to others. This movement leads systems to constantly move towards a state of initial conditions or disorder. However, after a while, with the action of entropy, we must accept that a new system is born.

**What does this mean?** The universe is constantly evolving, while the amount of energy remains constant. Therefore, development occurs through the exchange of places in entropy. From this perspective, another approach to the speed of entropy emerges. If the flow of energy is fast, this leads to "high entropy," and if it is slow, it results in "low (negative) entropy." High entropy is dangerous for all entities in the material world because it accelerates the decay of matter.

This situation causes entropy to increase rapidly, and consequently, energy deteriorates more quickly. Low entropy, while less dangerous than high entropy, implies inaction, which is an impossible state for conscious beings living on Earth who sustain their life cycle by utilizing all the vital values on Earth. Therefore, "balance" becomes important here, meaning "preserving energy at an appropriate level and speed."

Hence, when we delve into the expansion of entropy, the most important principles of chaos theory emerge. First, every system is doomed to decay because entropy cannot be prevented. Second, energy moves from less to more, from hot to cold, until a balance is reached, but it cannot remain in a state of balance because it requires compensating for deficiencies in other areas. Entropy presents these two facets, and after the advent of quantum mechanics following the shattering of Newton's mechanical world, theoretical physicists and mathematicians focused their efforts on this field. However, that's not our topic here. We are more interested in exploring the chaotic behaviour of entropy in human and societal systems and its relationship with karma.



As mentioned before, according to chaos theory, every system tends to return to its initial state, which is a state of disorder. This tendency arises from the inevitable disintegrating power of entropy. However, when we say that the system is breaking down, a frightening aspect emerges. This system could be a workplace, a production activity, or a living space, and those who create these systems never wish for such a breakdown. This scenario is a nightmare for everyone. However, the expression may evoke thoughts of something bad, but the situation is not as dire as it seems.

Chaos signifies the disorder that comes with it, actually describing a new system that will replace the old one. Therefore, it is emphasized, "chaos is a step." This also means that the future is variable, constantly being rewritten and that due to human tendencies for disorderly behaviour, there are multiple alternatives at any given moment.

When it comes to entropy, individually, when we consider that each of us creates small systems within one of the systems within the main system, everything we possess materially is moving towards decay in some way. This is clearly inevitable. The only thing we can do against entropy is to slow it down or speed it up. This is something that will be determined by our actions. Therefore, our actions as individuals in the material world become the determinants of how long a system will stand.

Looking at it from the perspective of creating karmic entropy, the most dangerous thing for us is to create high entropy. The result of our decisions and actions is essentially entropy. Therefore, when we understand karma well, we also find ways to avoid high entropy. In short, it involves creating relatively good behavior. For example, making an effort to lead a healthy life as an individual and exercising self-control for that purpose reduces the level of entropy. This way, the outcome of the chain of actions, which is karma, is to live longer in good health.

Therefore, living with low entropy while maintaining a low level that varies according to each society essentially means creating good karma and reducing the rate of decay caused by entropy. It is possible to exemplify this in the context of personal systems in numerous ways.

On the other hand, entropy in societies created by humans is crucial, and as explained in the Karma book, creating social karma is a variable that directly affects all the societies that make up that society. Today, societies are defined by countries and states. Those who govern the state, through their decisions, determine the entropy rate of the state's resources. The efficient and appropriate utilization of resources is good

karma for the state and at the same time, an example of low entropy that reduces the state's decay process.

Entropy's second characteristic is even more critical, that is, the transfer of energy from one place to another and the creation of a kind of balance! It's clear that the potential of the karma created by states is measured by entropy. Now, let's provide some historical examples of this characteristic from the past to the present.

*Look at the Ottoman Empire!* It transitioned from a disorderly structure under Fatih Sultan Mehmet to become a state and then an empire. During the reign of his son, Yavuz Sultan Selim, it reached its widest boundaries, spanning three continents, and became the world's largest political power. However, the era of Suleiman the Magnificent (Kanuni) was a period of high entropy. Although the empire's borders remained the same, its resources, which constituted the components of power, were rapidly depleted, leading to high entropy. Subsequent sultans and their rulers, even if they realized the situation, could not keep up with the political, scientific, and demographic developments in the surrounding world. Finally, at the beginning of the 20th century, the imperial system found itself in a state of disorder, in its starting position. However, Mustafa Kemal Atatürk, who fully implemented the subsequent principles of Chaos theory, established a new system: the Republic of Turkey. This is a simple example of the way entropy moves!

Today, similar problems are observed in developed countries. Globally, the most important sources of life for humanity are food and energy. While nearly one-third of the world's population lives below the poverty line and cannot continuously meet their energy and food needs, the United States and European countries are experiencing high entropy in terms of food and energy. These countries, which make up approximately 10% of the world's population, use approximately 64% of the resources for their own countries.

Access to an abundance of food products, often glorified as indicators of prosperity and a well-preserved standard of living, has actually become a high-entropy generators. According to data from the World Health Organization, easy access to food has turned into a disadvantage in these countries, leading to a rise in obesity. Due to obesity, healthcare expenditures, which are increasing exponentially every year, will soon impose a significant financial burden on the people of these countries, making life more expensive, and these nations will begin to experience economic stagnation. On the other hand, a significant number of people, who have lost hope of survival due to hunger, become refugees and try to enter these countries illegally. The data is very

alarming. Every day, 34,000 people become refugees worldwide. However, these countries continue to take ruthless measures that ultimately lead to death. The resources allocated for the people entering illegally are increasing day by day.

The same holds true for the ongoing Ukraine-Russia Federation war, which began recently but has been ongoing for several years. While Russia is the invading party in Ukraine's territories, the fundamental reason for the war is the European Union countries and the United States. However, due to the war, a significant amount of grain, especially vital to the famine-prone African continent, is not reaching its destination. The energy expended by Western countries for this war is actually creating high entropy in their own countries. In the past year, the number of refugees trying to enter these countries from Africa via the Mediterranean has increased dramatically. Consequently, these countries have allocated more resources for protection measures. This has led to the creation of high entropy in the West.

However, these examples are social karma scenarios. Powerful and developed countries have established systems that will use a significant portion of the world's limited resources for themselves. Therefore, achieving balance has become impossible. However, every system is inherently disorderly, and entropy is the most critical factor in disrupting these orders. The limited nature of global resources is the most significant indicator of this. So, when resources start to decline after a while, the countries that will face social problems are also in this group. Because people are accustomed to the welfare system created by capitalist logic, when they cannot access these resources at the levels they are accustomed to, the high entropy of their systems will manifest itself, and government systems will become disorderly.

The important thing to note is this: energy tends to move from abundance to scarcity. In other words, the energy used to transfer to the other side is not energy created out of nothing; rather, it is a portion of its own energy. When the transfer occurs, its own internal energy will decrease. The energy it transfers actually increases the entropy of its system, which means that the system's disorder accelerates.

Another type of this is ensuring the disruption of a system in another region as a result of transferring a portion of the energy to one region. The best example of this is still hidden in the corners of history. With Vasco da Gama's discovery of the Cape of Good Hope in Africa, a new trade route was opened for Westerners: the "Spice Route." Large ships began transporting more Eastern goods by sea, and suddenly, Eastern trade fell into the hands of Westerners. This situation led to another entropy. The "Silk Road" had been the only trade route for thousands of years from east to west, and all the states

in the East became very wealthy. However, the Spice Route completely disrupted the Eastern gains of the Silk Road. In other words, the trade system here underwent chaotic disruption, and this situation only began to improve after the collapse of the Soviet Union. So, even though a trading system that lasted for a thousand years underwent entropy and disruption, and even though a long time, about 450 years, had passed, a new system emerged.

Here, those who govern states need to understand chaos theory and entropy very well. This includes understanding that every step taken in relations with other states results in a loss of their own energy. Typically, in relations between states, especially advanced capitalist countries, every action they take in line with their own interests leads to an increased need for more energy transfer due to development. This is high entropy and essentially an acceleration towards disorder. On the other hand, this is an action, and every action will have a karmic reaction. What matters is whether the karmic response is worth the action.

For instance, following the 9/11 terrorist attacks, the United States moves to enter Afghanistan with NATO forces to eliminate the Taliban and Al-Qaeda eventually turned into a difficult situation for other NATO countries. They became targets of terrorist organizations themselves, and as a result, a significant portion of their state resources was allocated to ensuring internal security. The United States, on the other hand, suffered both financial and military/civilian losses and eventually had to withdraw. The developments that occurred here are important both in terms of entropy and karma. From an entropy perspective, these states, despite being powerful, have increased their entropy by expending a significant portion of their resources here.

From a karma perspective, their collective action to participate in the Afghanistan operation resulted in a reaction that was damaging to themselves. When we look at Afghanistan's history, it would not be wrong to say that the karmic consequences of the actions taken by the Soviet Union in these lands, when they also invaded them, were one of the factors that accelerated the disintegration process.

### **A Look at the structural principles of Chaos Theory**

The main requirement for separating this part of the theory is to examine the structural principles necessary to understand the conceptual dimension of Chaos and

grasp its behavior. Structural principles are important for understanding how to act against the strong influence of the theory's core principles. In this context, the first structural principle is "**Bifurcation.**"

Bifurcation in Chaos Theory actually shatters the perception that past events are the causes of future events, and everything follows a linear progression, so everything is predetermined (Verma, 2005,p. 92).

While every system is engaged in an operational state connected to its own upper system and at the same level as others, when developments that affect the system's order occur, although it may seem like a dilemma, it actually means the emergence of new alternatives. This is a moment of decision that will bring about a change in action. Bifurcation can have two or many points. What matters here is the deviation it will create in the linear path. This means the beginning of writing a new future. Bifurcation is inherently in direct interaction with other principles because Chaos is flexible, and this flexibility is actually a feature that revitalizes the system at bifurcation points and also has a butterfly effect on other systems. As understood from the nature of the principle, it is directly related to Karma within Chaos Theory. Just as karma responds to our actions with a reaction, it should not be forgotten that the factor that leads us to choose these actions is the bifurcations in the system.

However, the two characteristics of this principle known in the literature as "bifurcation points" are crucial. The system reaches the bifurcation point at its most sensitive moments. The paths that emerge generally include one that is linked to the origins and prevents deviation onto a different path, and the other is a path that leads to transformation according to the criteria required by the circumstances. The choice is actually related to the fundamental dynamic of chaos theory, which is the principle of change, whether it opposes the principle of change or adapts to the conditions of change. Therefore, the choice actually signifies a situation that will either increase or decrease entropy, sustain, or lead to extinction.

The most important thing here is as follows. Chaos theory focuses on a process that moves towards disorder. Therefore, one end of the bifurcation, known as the "radical way," shows the predictable and easy path of choice. However, when considering disorder, this option is already a path that will accelerate the system's collapse. Therefore, the essence should be to choose the "unpredictable". Only through this can the system survive in an unpredictable future, combine with others, and settle into a new orbit. As seen, when a decision is made at the bifurcation point while the system is moving in one direction, it changes the direction of the system.

Especially contrary to expectations, i.e., going against the radical decision, makes the system both unpredictable and offers different bifurcation points on its new trajectory. Therefore, in the face of this situation, there is an important saying to remember: "Chaos always presents new opportunities." Radical choices cannot provide these opportunities because they are predictable. The outcome of such choices is predictable, creating situations where what will come next can be foreseen. Therefore, the most crucial thing is to make choices based on the fundamental principles of Chaos Theory, which are non-linear, unpredictable, and undeterministic.

Now it's time to ask a question:

*But how can it be possible for this choice to be correct within a context that is unpredictable and disorderly?*

The answer to this question lies in the other two principles that work on the same frequency as bifurcation: "**cross-analysis**" and "**attractors**."

Cross-analysis is actually a well-known but rarely applied principle. It involves creating a method for making decisions by evaluating the paths emerging at the bifurcation point in terms of their orientation toward the future and comparing them with each other. Scientifically, this method is used as the "visual analytic support decision method" and is based on evaluations and decision-making processes at the bifurcation point.

The important thing here is how the decision of which path to choose at the bifurcation area is made. In making this decision, another principle of the theory comes into play, which is the "**attractors**." Attractors, as we call them, are influential and compelling factors that become most prominent during the bifurcation. In general, there are three types of attractors:

### **Punctual Attractor**

These attractors occur during periods when the system has not yet become disordered. They may not create significant changes in the system's general trajectory but can have accelerating or decelerating effects on disorderliness and can lead to bifurcation. When considering an individual as a system, these are the behaviors and events that have a relatively minor impact on life but draw attention and prompt action.

### **Periodical Attractor**

These attractors manifest themselves at certain times or during specific activities within the system's general flow. These types of attractors are not significant bifurcation points because there will be opportunities for them to reoccur within the system's general trajectory. They follow the system as it moves towards disorderliness in a predictable manner. Therefore, they do not have a profound impact on the system, either positively or negatively, as they can be anticipated to some extent within the disorderliness.

### **Strange Attractor**

These attractors are the ones that significantly affect the main trajectory of the system, creating high entropy within it. They possess unexpected and unpredictable characteristics and are true bifurcation points. They exhibit chaotic behavior and can have a substantial impact on the system's development. Analyzing these attractors requires advanced cross-analysis because they are powerful enough to cause changes in the system.

The principle that has had the most profound impact on the philosophical discussion of chaos theory is the principle of "self-renewing flexible structures." The dynamic that contributed to the formation of this principle is the planet Jupiter and the storm eye found on its surface.

For thousands of years, Jupiter was merely a faint light in the sky, observed as its orbits intersected. It played a central role in Greek mythology, associated with Zeus, the chief of the gods on Mount Olympus, and also held significance in astrology. Mythologically, in the context of Crete, it was the son of Chronos, the primary deity of the thousand-year-old Minoan civilization. However, in Crete, Kronos had become synonymous with a wrathful god who constantly spewed smoke and lava, earning the displeasure of the Minoans. They consistently offered sacrifices to their god and placed him at the forefront of their mythology. Jupiter was seen as the feeble son of the powerful and angry Kronos, only relevant to them. Eventually, Kronos revealed his might to them, unleashing a cataclysmic explosion and earthquake that reshaped nearly the entire Mediterranean region.

Most of the Minoans perished, some migrated to North Africa, and others settled along both coasts of the Aegean Sea, establishing a new civilization after the fall of Minoan culture—the Greek civilization. However, this time, Kronos was no longer present, as Zeus had taken his place.

Over thousands of years, Jupiter was observed from Earth and followed. With the advent of modern telescopes, Jupiter became more visible and detailed, and as telescopic power increased, its clarity improved further. Eventually, Jupiter was studied as a planet rather than just a source of light. During these observations, the famous "eye" of Jupiter was noticed. It had always been there, a colossal and intriguing feature. Some scientists speculated that it might be continuous smoke from a volcano, while others considered it to be a satellite very close to the planet.

In the following years, the Viking-1 spacecraft, sent to explore the solar system, entered Jupiter's close orbit and began sending detailed photographs of the "eye." It was then understood that this was a continuously self-renewing and massive storm. This short story provides insight into the **"self-renewing flexible structures"** principle, which has made a significant contribution to chaos theory.

In this context, there are three essential characteristics of this principle: "flexibility, self-renewal, and energy." When the activity on Jupiter's storm eye is examined, it is observed that the storm moves around the planet, loses power as it progresses, but eventually regains its former strength. In other words, it continually renews itself in every situation. This can be explained by its ability to adapt to new circumstances as needed, rather than waiting for conditions to occur. Therefore, this feature also emphasizes the importance of flexibility in chaos theory. Additionally, the continuity of Jupiter's storm eye is based on the principle that, instead of continuing its journey by constantly gaining new energy, it rejuvenates itself by utilizing the energy within itself. This explains that systems renew themselves while still retaining their old energy.

Disorderliness, unpredictability, and undeterministic developments and outcomes are the fundamental characteristics of chaos theory. Systems are constantly moving towards disorder. This implies that staying rigid will only lead to high entropy and subsequent disruption. Therefore, the only way for systems to develop without creating high entropy, shaping themselves according to new opportunities, and gaining strength from other systems is by maintaining a flexible structure. Flexibility provides the system with the opportunity to renew itself.



## Conclusion

When we look at the interaction between chaos and karma in this context, we see that similar aspects come to the forefront. When we minimize the topic to the individual level, we observe that a human being is a conscious, intelligent entity that is disorderly, unpredictable, and constantly engaged in action, composed of physical and spiritual bodies. Here, it may be worthwhile to briefly mention the two types of actions of the individual. These are the first group of actions related to oneself, and the second group of actions directed towards others.

The karmic consequences of the first group of actions may manifest themselves in the short or long term, while the second group of actions has karmic aspects that can either harm or benefit others. When we see human beings as part of artificial systems that span from the family unit to companies, states, and international organizations, it becomes evident how effective their actions actually are.

Throughout history, all philosophers have described the consequences of human actions as karmic, but their primary goal has been to create systems that operate within the chaos of the Chaotic universe, which we call order within disorder, by taking predictable actions and obtaining definite outcomes to protect these systems. However, Chaos Theory also tells us that no artificial system (created by humans) can continue indefinitely without disruption (Dandoy and Plaza, 1998,p. 175).

Here, flexibility becomes of paramount importance. In the face of problems (other artificial actions) that an individual encounters at any moment and in an unforeseen time, being flexible and adapting to this new situation is critical for the development of individual or societal systems. This is referred to as "Situation Awareness."

Therefore, it is essential for humans to be aware that every action they take will result in a reaction, and to live in a way that creates good karma, first for themselves and then for the people around them. This is the state of "living by creating good karma," and it is the most important way to be in harmony with the unpredictable and disorderly universe that is moving towards chaos and disruption.

To put it plainly, as mentioned earlier, systems move in one direction towards disruption. It is impossible to prevent this. However, it is possible to slow down its pace, establish a balance, make good use of the moments of bifurcation, and live as a flexible system. Therefore, it is necessary to live with low/sufficient entropy, and this can only be achieved through "right action, right reaction, that is, creating good karma."

### **Disclosure statement**

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