

## **Decreasing Entropy in Thoughts and Evolution: Main Ability Related to Inside Nature**

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### Abstract

In general, religious Gods have been considered for phenomena that cannot be objectively explained, based on the concept that humans are either believers or nonbelievers. However, science-based Gods prevent the existence of religious alleles, since they do not discriminate these two types of humans. Thus, the purpose of the present study is to mathematically explain phenomena by classifying them into the following six categories: infinity, no, complete fixed, incomplete fixed, chaotic solutions, and random solutions. It also examines the relationship between incomplete fixed and chaotic states (which is continuous and can be explained by chaos theory) as well as the relationship between other solutions (which is not continuous). It has been shown that the necessary conditions in chaos theory include continuous covariation and three or more variables. Moreover, in phenomena that involve physical bodies, there is a relationship with gravitational waves, while in chaotic phenomena, electromagnetic waves exist. The results, based on the second law of thermodynamics, showed that phenomena can be explained not as

an act of a religious God, but that of a science-based God. In addition, it indicated that science-based Gods can prevent the existence of religious alleles, since they do not discriminate these two types of humans (i.e., believers and nonbelievers).

**Key words:** Chaos Theory, Religious God, Time, Decreasing Entropy, Rearranging Thoughts, Evolution

Abbreviations:

$E(t)$  = quantity of energy at time  $t$

$E(0)$  = quantity of energy at time zero

$c$  = speed of light

$l$  = length

$t$  = time

$k$  = constants

## Introduction

Religious Gods have been generally considered for phenomena that cannot be objectively explained, based on the concept that humans are either believers or nonbelievers. However, science-based Gods prevent the existence of religious alleles, since they do not discriminate these two types of humans. Thus, the purpose of the present study is to mathematically explain phenomena by classifying them into the following six categories: infinity, no, complete fixed, incomplete fixed, chaotic solutions, and random solutions. It also focuses on the relationship between incomplete fixed and chaotic states (the latter of which is continuous and can be explained by chaos theory) as well as the relationship between other solutions (which is not continuous). It has been shown that the required conditions in chaos theory include continuous covariation and at least three variables. Moreover, in phenomena that involve physical bodies, there is a relationship with gravitational waves, whereas in phenomena that are chaotic, electromagnetic waves exist. Based on such findings, natural phenomena can be explained by chaos theory, even though the energy of thoughts has no relationship with

gravitational or electromagnetic waves. Finally, according to the second law of thermodynamics (i.e., the law of increasing entropy), entropy in electromagnetic waves is constant, whereas in living creatures, entropy decreases in the energy of thoughts. Therefore, their abilities can be understood not as an act of a religious God, but that of a science-based God.

Methods

Explanation of Chaos Theory

Definition of Chaos Theory

The definition of chaos theory was reported in the “Relation of Chaos Equation to the Schedule for Evaluation of Individual Quality of Life-Direct Weighting Method” (Yanagisawa, 2014).

*Relationship between Continuous Covariation and Chaos Theory*

As stated earlier, the necessary conditions of chaos theory include continuous covariation and at least three variables (Yanagisawa, 1996, p.115). A representative chaos equation is expressed as follows:

$$Y(n+1) = p[1 - Y(n)]Y(n) \quad (1)$$

In Equation 1, the three variables are  $Y(n+1)$ ,  $Y(n)$ , and  $p$ . In this case, there is continuous covariation between  $Y(n+1)$  and  $Y(n)$ . In addition, Equation 1 is equal to the following two equations:

$$Y(n+1) = p[1 - X(n)]X(n) \quad (2)$$

$$X(n) = Y(n) \quad (3)$$

Here, since the calculations in Equations 2 and 3 are alternately repeated, the solutions to  $X(n)$  and  $Y(n)$  are in an ordered spiral state. Once  $Y(n)$  is determined,  $Y(n+1)$  changes, according to Equation 1. However, once  $Y(n+1)$  moves to the position of  $Y(n)$  in Equation 1,  $Y(n+2)$  also changes. Thus,  $Y(n)$  can never settle into its original pre-chaotic value. This relationship indicates that, once a variable has changed into another, it cannot return to its original value, and the correlated variable relationship (equivalent to covariation) becomes unsettled. Hence, the covariant relationship between  $Y(n)$  and  $Y(n+1)$  in Equation 1 may

sustain the chaotic state.

If the variables are uncorrelated, then a chaotic state cannot be established. As the parameter  $p$  changes from 3.0 to 3.56995 (i.e., the “Feigenbaum point” (Feigenbaum, 1978)), the number of fixed points in Equation 1 varies from 1 to 2 and eventually to 4. Below the Feigenbaum point, the solution  $Y(n)$  converges, while above the point, it splits into a localized chaotic state and a proliferating chaotic state. However, the solution does not converge in the chaotic state.

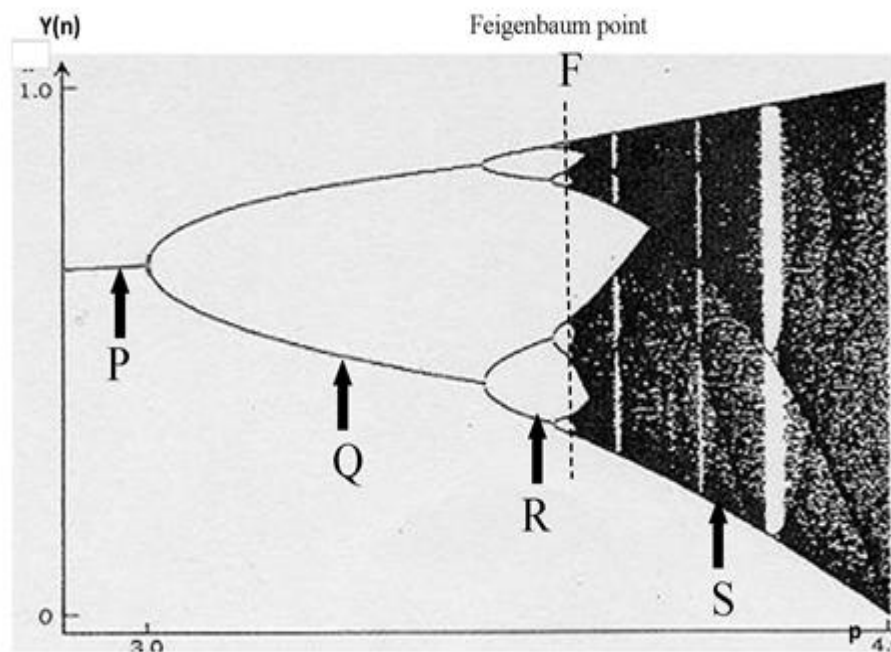


Figure 1: Logistic map of Equation 1

In Figure 1, the vertical axis is  $Y(n)$  and the horizontal axis is  $p$  (Yanagisawa, 2014). Parts P, Q, and R represent the one, two, and four converging solutions, respectively, while Part S represents the chaos solution with no converging. Finally, the dotted line F indicates the Feigenbaum point.

Mathematical Classification: Relationship between Inside Chaos Theory and Outside Chaos Theory.

There are possible or impossible solutions. And there are infinite or no solutions in impossible solutions. Infinite and no solutions are shown as Parts A and B in Figure 2. For example, the solution of Equation 4 is infinite, whereas there is no solution for Equation 5:

$$0x = 0 \tag{4}$$

$$x = \frac{1}{0} \tag{5}$$

Moreover, in Figure 2, the possible solutions, i.e., complete fixed, incomplete fixed, chaotic solutions, and random solutions, are shown as Parts C, D, E, and F, respectively.

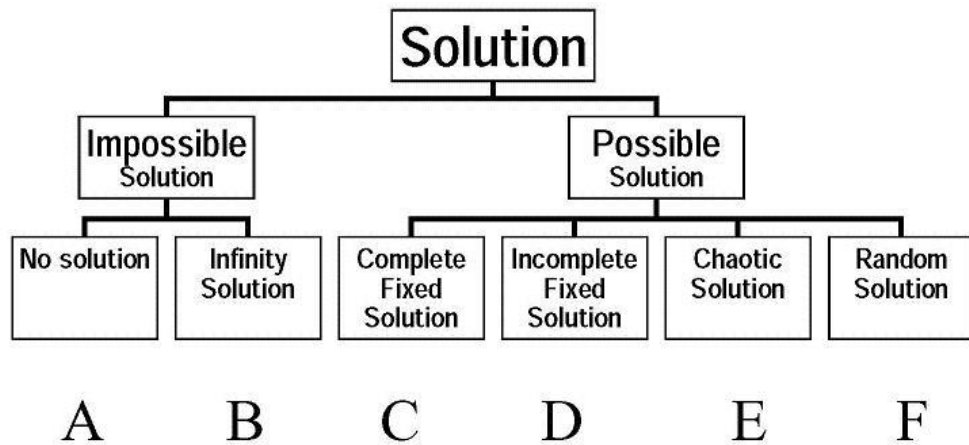


Figure 3: A schema near the Feigenbaum point in Figure 1

The central part of Figure 3 is a schema near the Feigenbaum point in Figure 1. The vertical axis is  $Y(n)$  and the horizontal axis is  $p$ , while a fixed-value outside chaos theory is shown in Part C. For example, when  $p$  is 3 in Equation 1, then:

$$Y(n+1) = 3[1 - Y(n)]Y(n) \quad (6)$$

Then, the solutions of Equation 6 are converged to  $2/3$ :

$$\lim_{n \rightarrow \infty} Y(n) = \frac{2}{3} \quad (7)$$

Equation 7 does not change with the change of  $p$ , since there is no relationship between them. Since Part C is a complete fixed state, it is shown with Equation 7. When each  $Y(n)$  and  $Y(n+1)$  in Equation 1 change to  $U$  and  $V$  with no  $n$ , then:

$$V = p[1 - U]U \quad (8)$$

Since the relationship between  $p$  and  $U$  or  $V$  is not covariant, Equation 8 is not a chaos equation. Thus, its solution is a complete fixed state outside chaos theory. In addition, the random value is shown in Part F as outside chaos theory, which may be misunderstood as the rule in which number of letters must be infinity in the true random state. Since the rule is always shown in the equation, there is no equation showing the random state. Thus, in the random state, all of the solutions are right and there is no reproducibility.

Parts D and E are equivalent to a fixed state and chaotic state. As stated earlier, Equation 1 is inside chaos theory. The fixed state, as in Part D, can change to the chaotic state with the change of  $p$  in Equation 1. Hence, the

fixed state in chaos theory is incomplete. Here, when  $p$  is 4 in Equation 1, then:

$$Y(n+1) = 4[1 - Y(n)]Y(n) \quad (9)$$

A chaotic state can be established in Equation 9. However, a necessary condition of chaos theory is not filled in Equation 9, since there are only two variables. Equation 9 also exists outside chaos theory, since there is no fixed state. It is important to note that the state inside chaos theory can continuously change to a fixed state or chaotic state. Finally, the relationship between Parts D and E is continuous in the majority of cases, whereas the relationship between Part C and D, and that between Parts E and F, are not continuous. The ranges of Parts D and E are limited, due to inside chaos theory, whereas the solutions of Part F are unlimited.

#### Relationship between Environmental Factors and Mathematical Classifications

Environmental factors are understood as 5W1H (i.e., who, when, where, what, why, and how), which is also required when solutions change in relation to environmental factors. There is no relation to environmental factors in impossible solutions, and in complete fixed and random states, whereas there are some relations to such factors in incomplete fixed and chaotic states. Thus, it is a state of inside chaos theory that requires 5W1H.

The complete fixed solutions are always the same with no relation to 5W1H. Since mathematical facts never change with the user, mathematics is the most correct method for communicating with living beings. And 5W1H is not required because right past facts do never change with environment factors. The years that past facts occurred were corrected in many cases. They are future till the corrected years are confirmed. Because mistake information will change with environmental factors, 5W1H is required to it. The correction of past fact is only a mistake in thoughts. The current situation does never change with correcting years. 5W1H can

become meaningless, since there is no relation to environmental factors in the random state. However, complete fixed and random states become confused in chaos phenomena when they exist in real life.

### Relationship between Time and Energy

Isaac Newton believed in the existence of absolute space and time, even if all physical bodies disappear in the universe (Stanford Encyclopedia of Philosophy, 2004). Conversely, Gottfried Wilhelm Leibniz believed that space and time are logically and metaphysically related to physical bodies or events (Stanford Encyclopedia of Philosophy, 2007). More recently, scientists have been using telemeters to measure absolute time (e.g., atomic clocks). However, the “chicken and the egg” problem emerges, based on Equation 10:

$$l = ct \quad (10)$$

In this regard, an atomic clock presupposes the presence of absolute length, while an atomic absolute telemeter presupposes the presence of absolute time. Since the relationship between absolute distance and absolute time is contradictory in current science, a new definition of time was presented as follows (Yanagisawa, 2004):

$$t = \frac{\log \frac{E(t)}{E(0)}}{k} \quad (11)$$

Equation 11 is similar to that of Leibniz in which the k in electromagnetic and gravitational waves is minus.

Developed by British astronomer Arthur Eddington, the “Arrow of Time” refers to a quantity in physical science that requires a certain direction in time. However, time has been proven to be an imaginary number in relative theory (Einstein, 1905). In other words, since there is no direction in an imaginary number, there is no direction in time.

The Arrow of Time concept is generally explained according to the second law of thermodynamics in science. However, this law can only be adapted in phenomena with gravitation (Yanagisawa, 2012). Furthermore, since this concept exists in electromagnetic phenomena and thoughts with no gravitation, it can be defined by chaos theory without the second law of thermodynamics (Hunter and Benson, 1997).

#### Relationship between Previous Facts and Time

Since the direct measurement of time, based on previous facts, is in the reverse direction of the Arrow of Time, it cannot be measured. As a result, all previous facts are understood as superficial phenomena with no time difference in thoughts. Each previous fact and thought is equivalent to positions in space and shadows on a screen, the latter of which has no relation to positions in space. Thus, 5W1H of previous facts is required for the understanding of thoughts.

#### Relationship between Natural Phenomena and Entropy

It was initially believed that no relationship existed between natural phenomena and entropy, since entropy was a statistical word (Yanagisawa, 2012) used in the second law of thermodynamics. In addition, the second law of thermodynamics was considered when the science between electromagnetic waves and evolution was insufficient and it was believed that phenomena in real life could not be scientifically explained. Thus, religious Gods were always necessary to explain phenomena. Of course, religious Gods were considered before considering the second law of

thermodynamics. However, since objective proof of phenomena is difficult to obtain, it is equally difficult to have the believers in religious Gods to understand the scientific relationship between natural phenomena and entropy.

#### Relationship between Rearranging Thoughts and Chaos Theory

Since the energy of thoughts in living creatures can consider mathematically, it is possible to understand the six aforementioned categories. In addition, rearranging thoughts and learning functions are related to inside chaos theory (Yanagisawa, 2012), while dreams are related to outside chaos theory, due to the random state.

As stated earlier, the necessary conditions of chaos theory include continuous covariation and three or more variables. In phenomena with physical bodies, it exists in relation to gravitational waves and electromagnetic waves (Kuwashima, 2011). Thus, most natural phenomena are related to inside chaos theory.

A random number, such as passwords with no relation to other thoughts, is equivalent to Part F in Figure 3. Both covariation and limited range do not exist in a random state, since a random state with no mathematical rule cannot change into a chaotic state. For example, since there is no continuous covariant relation to other people with certain diseases, they may be similar to a random state in human society. However, they are equivalent in a chaotic state, since there are some covariant relations between nature and human actions. Although it is considered that nature and science do not change, they can change with significant changes in the natural environment. Therefore, they are equivalent to the incomplete fixed state, as in Part D, and the chaotic state, as in Part E. In other words, the mathematical solutions and the previous facts (without continuous covariation to environmental factors) cannot change to the chaotic state.

#### Relationship between Natural Phenomena and Thoughts

The entropy of natural phenomena with physical bodies, electromagnetic waves, and evolution can increase, remain unchanged or decrease. However, since such entropy occurs in chaotic phenomena, the Arrow of Time also exists. For example, this concept exists in the natural death of humans, but not in their thoughts during or after death. In this regard, human diseases related to inside chaos theory can be explained as near-outside chaos theory. In addition, the incomplete fixed state after converging is similar to the complete fixed state when its environment does not change. For instance, if a patient suffering from severe depression stops in a previous condition, based on his/her covariant relationship with environmental factors, then he/she cannot effectively move forward.

#### Relationship between God and Rearranging Thoughts

Newton's philosophy in relation to time and space was contradicted by Leibniz and Equation 11. In addition, many people utilize religious Gods for the purpose of understanding phenomena that cannot be explained with science. Instances of such thinking can be seen in explanations of certain theories such as the Ptolemaic model of the universe, the Copernican theory, and the Big Bang theory. This means that humans, as believers of religious Gods, use such thinking to define phenomena in regard to space and time, which would be difficult to explain otherwise. However, phenomena, based on entropy, have been recently explained within the realm of religious Gods. For example, there is Piaget's developmental theory (Ojose, 2008; Yanagisawa, 2016a), Lewis's developmental theory (Lewis 2003; Yanagisawa, 2016b), the God theory (Davis, 1997; Yanagisawa, 2012), the SEIQoL-DW (Schedule for the Evaluation of Individual Quality of Life-Direct Weighting) method (O'Boyle, McGee, Hickey, O'Malley, & Joyce, 1992; Yanagisawa, 2014), the counseling (Pryor, 2010; Yanagisawa, 2015) method, and the cryptogram method (Shukla, Khare, Rizvi, Stalin, & Kumar, 2015), which were all explained as rearranging thoughts. Since there is no decreasing entropy phenomenon in natural phenomena, evolution is considered as an action of God. In addition, since humans "feel" the presence of God when thoughts pass through the Feigenbaum point with decreasing entropy (Yanagisawa, 2012), it can be considered as a science-based explanation for God. It is a

main ability of living creatures related to inside natural phenomena without fantasy.

There are increased, decreased, and unchanging entropy phenomena in human thoughts. For example, the former is the change from a normal state to a panic state, while the latter is a state in which the thought process can stop, as in those suffering from depression. In both states, it is possible to “brainwash” those into believing in religious Gods, since it is difficult to mathematically show the increases and decreases in entropy. As a result, it makes it impossible to promote and believe in science-based “God’s entropy.” However, it is possible to convince those by rearranging thoughts.

In sum, all living creatures continue to thrive, even if they experience dangerous or death-defying phenomena, as shown in the Japanese proverb, “Danger Past, God Forgotten.” This proves that human possess immeasurable adaptation abilities. However, human thoughts may pass through the Feigenbaum point during extreme circumstances, such as suicide, when one’s thoughts of God disappear upon death. In this regard, even religious Gods cannot remain in the thoughts of those who died in such a manner.

## Discussion

Overall, there are two types of phenomena: those that can be observed objectively and those that cannot be observed objectively. Since most phenomena are related to physical bodies, they are usually observed objectively. Thus, it is thought that energy phenomena with no relation to physical bodies cannot be observed objectively.

In this study, subjective and objective phenomena were mathematically explained. The subjective phenomena included living phenomena such as death, evolution, rearranging thoughts, certain diseases, dreams, etc. However, based on a scientific approach, such as the second of

thermodynamics, it is possible to understand “acts of God” from a scientific perspective.

In general, religious Gods have been considered for phenomena that cannot be objectively explained, based on the concept that humans are either believers or nonbelievers. The differences in those who are believers and those who are not have separated humans into a wide array of categories, which have inspired conflicts and even wars. This belief in religious Gods have in fact, has promoted discrimination of certain individuals. On the other hand, science-based Gods tend to look at all humans equally, including those who do not believe in religion. Therefore, it is important that this aspect be the subject of focus in order to understand God’s relationship to humans in general.

### Conclusion

Throughout history, religious Gods have used to describe phenomena that were difficult to objectively explain. However, such thinking was solely based on the concept that humans are either believers or nonbelievers. Therefore, the present study mathematically explained certain phenomena by classifying them into the following six categories: infinity, no, complete fixed, incomplete fixed, chaotic solutions, and random solutions. It also focused on the relationship between incomplete fixed and chaotic states (which is continuous and can be explained by chaos theory) as well as the relationship between other solutions (which is not continuous). The results, based on the second law of thermodynamics, showed that, phenomena can be explained not as an act of a religious God, but that of a science-based God. In addition, it indicated that science-based Gods can prevent the existence of religious alleles, since they do not discriminate these two types of humans (i.e., believers and nonbelievers).

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