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Different & Variable Natural Processes Not Opposed to Salvability of Human Mind's Mathematical Principles

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A B S T R A C T

The variability and diversity of natural processes do not contradict the possibility of preserving the fundamental mathematical principles that govern the human world. Mathematical principles that underlie many natural processes are excavated by human brain even though sometimes it fails as if it is under the supervision of a super-natural remote controller. Human brain is an automated rational self-confident tool given the human systems of cultivated habits and practices. But likely to err too or go erring wayward incurring several consequences not only to itself but also to its master, the distant remote controller.

The human brain governs abilities to uncover the mathematical principles that possess various natural phenomena. However, there are instances when it falters, almost as if it is being guided by a supernatural energy. Our packaged brain in its logical composition is installed in the organic human systems making us instant observers of Nature while at about the same time, keeping us ignorant of the fact that Nature too observes us. Nevertheless, it is prone to deviating from the perfect pitch and trajectory resulting in numerous consequences not only for itself but also for millions of lives. At the end of the day, different and variable natural processes are pressed into service by the brain to set its house in order. And, that order is surely a natural scheme of things or serial affairs from which emerged the so-called enunciations of 'Human Mathematical Principles.'

The aim of this Paper is to recapitulate the different & variable natural processes not opposed to the salvability of Human Mathematical Principles.

Keywords: Brain, Human, Natural, Processes, Mathematical, Systems, Principles, Trajectory, Controller

1. EVERY RESEARCH HAS THE BEGINNING OF UNIQUE INDEX

2. INTRODUCTION

Mathematical principles that underlie many natural processes is our educational output. The types of mathematical principles underlying different and variable ‘Natural Processes’ could be broadly tabled and stated as follows.

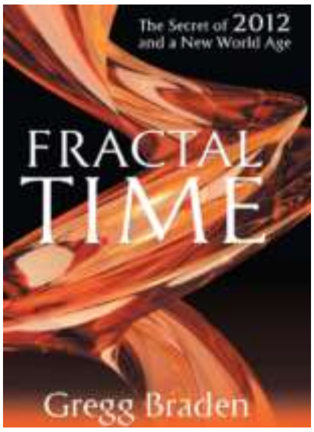
Conservation Laws	Chaos Theory	Probability & Statistics	Game theory	The growth of a bacterial population:
Rate Equations	Fractals	Chaos theory & nonlinear dynamics	Network theory	The spread of wildfire
Equilibrium	Calculus & differential equations	Optimization	The motion of a planet around the Sun	The Evolution of a species

The universe is governed by a set of mathematical principles that remain consistent across a wide range of natural processes, despite their diversity. This unity in mathematical principles allows us to gain a deeper understanding and appreciation for the intricate beauty of the natural world. Mathematics serves as a versatile tool that enables us to comprehend and analyse various natural phenomena. By applying these mathematical principles, we can uncover insights into the functioning of our surroundings and even make predictions about what lies ahead.

3. LITERATURE SURVEY’S COULD-READ-GOLD NATURAL AMERICAN AUTHOR

Gregg Braden, (2012): Fractal Time: The Secret of 2012 and a New World Age

In this fascinating exploration of life, Gregg Braden combines modern discoveries of nature's patterns (fractals) with the ancient view of a cyclic universe. The result is a compelling model of time—fractal time—and a realistic insight into what we can anticipate for the enigmatic year 2012 and beyond. By applying fractal time to the history of the world and life, he suggests that everything from the conflicts and alliances between nations to the patterns of human relationships reflect the recurring cycles of our past. With each cycle's repetition, it brings forth a more potent, intensified version of itself. The key idea is that understanding the past enables us to anticipate the future when similar conditions reoccur. For the first time in print, the Time Code Calculator provides the means to do just that! Through straightforward scientific explanations and step-by-step guidance, you can explore: - How the circumstances of 2012 have manifested in the past and what we can expect upon their recurrence - The significant dates that pose the greatest risks of conflict and offer the greatest opportunities for peace, as well as economic cycles like the stock market crash of 2008 - How Earth's position in space triggers cycles of spiritual development for humans - Your personal Time Codes for key business, relationship, and life-changing events - How each cycle presents an opportunity—a decision point—that enables us to choose a new outcome for the repeating pattern - The insights from the 1999 ice cores from Antarctica regarding past climate cycles, global warming, Earth's protective magnetic fields, and their significance for us today.



<https://books.google.co.in/books?id=R4LEj_LUtd0C&printsec=frontcover&source=gbs_ge_summary>

<Image source: https://youtu.be/ZGmJAp3J8w4?t=29><Gregg Braden - Bridging Science, Spirituality & the Real World<https://greggbraden.com/>

4. RESEARCH METHOD & METHODOLOGY

Mathematical Concepts-Mathematical Issues-Mathematical Contexts constitute the constructive educational backbone in this structured human world of ours which is the sole explorer of decoding the super-human, super-natural and divine-capacities. As a necessary and essential conditionality, secondary sources of research quality, research quantity and research data in their state of plenty availability across the established academic mathematical disciplines has got to be relied upon. This provided umbrella-coverage for the Paper’s title which sounds like a debate of a public affair.

5. DIVERSIFIED NATURAL PROCESSES

The remarkable comprehensibility of a wide range of natural phenomena can be attributed to a concise set of mathematical principles. Such principles serve as the globally unlimited universal framework for explaining and studying various processes including fluid dynamics (liquid-related), population dynamics (mass /solid-related) and galactic evolution (gaseous-related). Also, this set is called the diversified Gas-Liquid-Solid natural processes and form a segment of mathematical principles underlying different and variable natural processes, arrayed below.

Conservation Laws	Rate Equations	Equilibrium	Chaos Theory	Fractals

The diversity of natural processes is astounding, encompassing everything from the delicate dance of subatomic particles to the explosive birth of stars. Yet, beneath this apparent chaos lies a remarkable unity, a shared language of mathematics that governs the ebb and flow of the universe. Here are some of the key mathematical principles that underpin different and variable natural processes

The sheer range of natural phenomena is truly awe-inspiring, spanning from the intricate movements of subatomic particles to the breathtaking formation of stars. However, amidst this seemingly chaotic tapestry, there exists a profound harmony, a universal language of mathematics that orchestrates the rhythm and patterns of the cosmos.

This Paper introduces selectively fundamental mathematical principles that underlie the diverse and ever-changing processes of nature

5.1. Laws of Conservation Process

Certain quantities/properties, such as mass, energy, and momentum, are conserved in a closed system exhibiting process of conservation within a closed system. This signifies that these properties cannot be generated or created or annihilated or destroyed but rather be transferred or transformed or altered. Conservation laws impose significant limitations providing powerful constraints on the behavioural dynamics of natural systems and enable the prediction of their eventualities otherwise known as predictable outcomes.

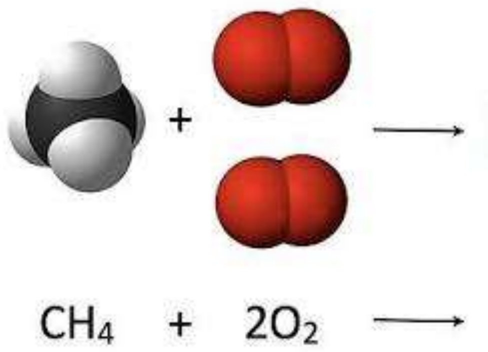


Image: Conservation of mass illustration <https://en.wikipedia.org/wiki/Conservation_of_mass>

5. 2. Rate Equations

Known as the rate-equations to describe how the rate of change of a quantity depends on its current value and other factors. These are balanced equations, in particular, elucidating the correlation between the rate of change of a certain quantity and its present value along with other influencing factors. To illustrate, the rate of change of a population could be contingent upon the population size, birth rate, and death rate. Frequently, rate equations are formulated as differential equations, enabling us to solve them and anticipate the future dynamics of the system or future behaviour of the system.

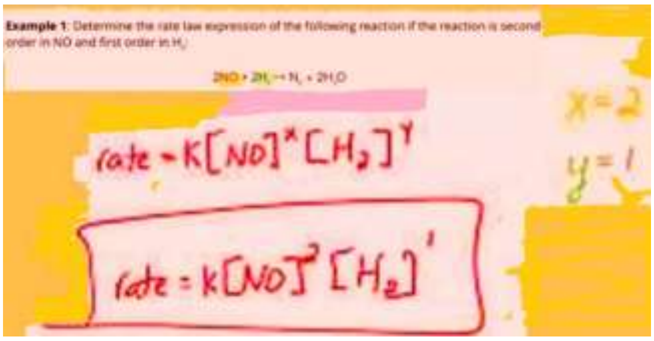


Image: Rate Equation illustration: Source: <https://study.com/skill/learn/how-to-write-a-rate-law-expression-given-reaction-order-explanation.html>

5.3. Equilibrium

Equilibrium serves as a prevalent culmination for numerous natural phenomena, and comprehending the factors that contribute to equilibrium is imperative for prognosticating the enduring dynamics of systems. This notion pertains to a state wherein the conflicting forces or processes within a system harmonize and nullify one another. In the state of equilibrium, the system remains unaltered over time, devoid of any net alteration. In other words, the state of equilibrium is a common endpoint for several kinds of natural processes and capable of perceiving the authenticities or conditions that lead to equilibrium is not only necessary but also essential preliminary for projecting in anticipation, a pattern of long-term behaviour(s) by systems. So self-obviously, the equilibrium conceptualizations point out state or states in which the opposing forces or processes contained in a system balance or cancel each other or one another out. At equilibrium, there is no net change in the system over a period of time.

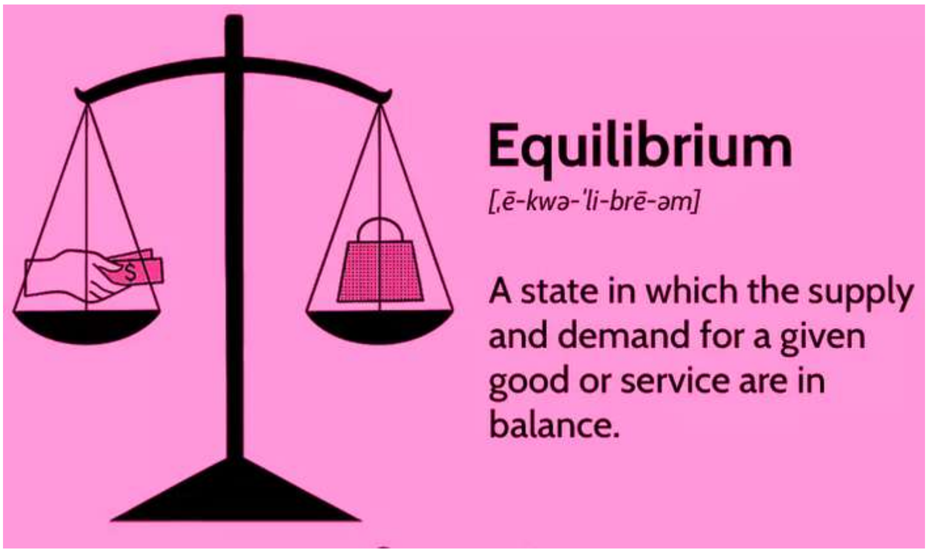


Image: Equilibrium illustration Source:<https://www.investopedia.com/terms/e/equilibrium.asp>

Further, the following will be helpful booklets of bullets to appreciate the state of equilibriums.

- The system remains unchanged over time when it reaches equilibrium, with no overall net change occurring.
- Once equilibrium is reached, the system remains in a state of balance, experiencing no net changes as time progresses.
- At the point of equilibrium, the system remains constant over time, with no observable net changes occurring.
- When a system reaches equilibrium, it maintains a steady state over time, without any discernible net changes taking place.
- In a state of equilibrium, the system remains unaltered over time, with no net alterations occurring.

5.4. Chaos Theory

Chaos theory has been deployed in elucidating a diverse array of natural occurrences, spanning from the conditional states of atmospheric phenomena to the rhythmic pulsations in the heart of a human being. Such disciplined mathematical infrastructure it is which always ferrets out dynamic systems to scrutinize for they exhibit an extraordinary sensitivity to their initial conditions. This branch of mathematics deals with systems that are highly sensitive to initial conditions. Small changes in the starting point of a chaotic system can lead to dramatically different outcomes, making them inherently unpredictable. Chaos theory has found applications in fields as diverse as weather forecasting, ecology, and economics.

So, Chaos theory has been used to probe and explain expansive range of natural phenomena embedded with the study of dynamical systems that are super-sensitive to initial conditions at the outset. Even minute alterations in the starting state of a chaotic system can result in profoundly disparate consequences, thereby posing challenges in forecasting the future behaviour of these intricate systems. This implies to mean that very small changes in the initial state of a chaotic system can lead to dramatically differently actionable outcomes, making it difficult to predict the long-term workable behaviour of such systems

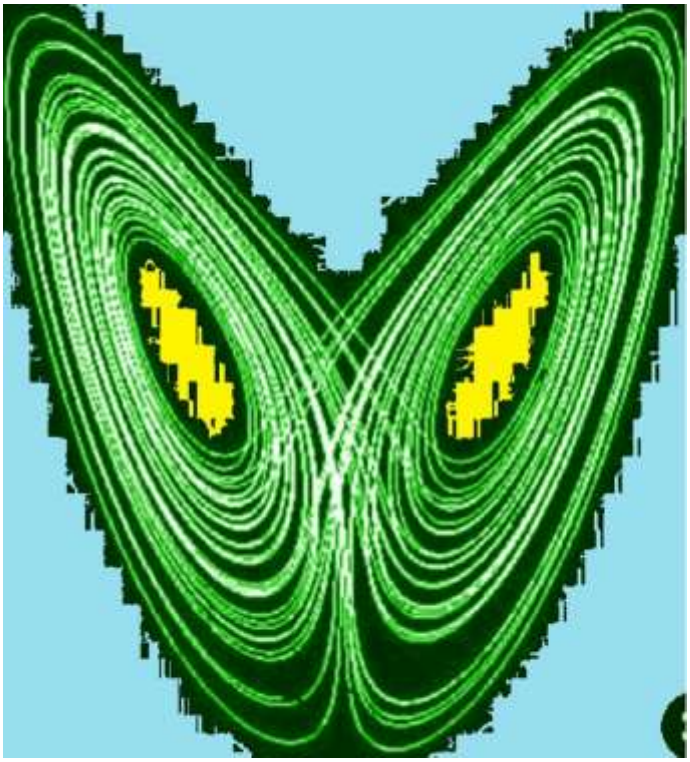


Image:<Chaos Theory illustration>Inspiring Source :<https://www.pinterest.com/pin/599963981580544466/>

5.5. Fractals

Latin Fractus refers to something that is shattered or divided, whereas the concept of fractals originates from the recurring patterns found in the structure of the natural world. This suggests that Nature showcases resemblances in both disorderly and random occurrences and forms.

Fractals have played a crucial role in enhancing mankind's comprehension of the intricate geometry inherent in natural phenomena, i.e., the complex geometry of natural objects and processes Hence an attractive study. They can be observed in various natural elements, ranging from coastlines and snowflakes to trees and lightning bolts. These geometric structures and shapes possess to exhibit the unique characteristic of self-similarity, wherein their fundamental patterns are replicated across different scales meaning thereby that they habitually repeat their basic patterns at different scales.

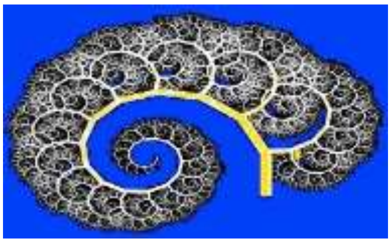


Image: Fractals illustration of curly hair-do; Source: <https://matthewjamestaylor.com/fractal-art>

For example, when it comes to a river and its tributaries, each tributary has its own tributaries, giving it the same structural organization as the entire river but on a smaller scale. This branching pattern is also seen in trees and their roots, as well as in blood vessels, nerves, and bronchioles in the human body. Other instances include landscapes with peaks and valleys, coastlines with numerous inlets and peninsulas, the mass distribution within galaxies, the arrangement of galaxies in the universe, and the structure of vortices in turbulent flow. Fractals were introduced to the field of natural sciences upon the realization that natural fractal entities exhibit self-similarity regardless of the level of magnification. Physicists have employed fractals as a tool to investigate the characteristics of turbulence dynamics. Moreover, fractals have proven valuable in the realm of physiology for analysing heart rhythm and modelling blood circulation, as well as in ecology for comprehending population dynamics.

Additionally, a quotable quote is here from the pen of the great Author known by name Gregg Braden who proclaimed thus in his extraordinary book "Fractal Time: The Secret of 2012 and a New World Age," which deals with patterns and predictions leading to the present era:

"Nature uses a few simple, self-similar, and repeating patterns-- **fractals** --to build energy and atoms into the familiar forms of everything from roots, rivers, and trees, to rocks, mountains, and us" (Gregg Braden, 2012). Also, see the Literature Review section above.

6. MATHEMATICAL VARIABLE KNOWLEDGE-PROCESSED STUDIES

The Mathematical Principles of the Human Mind, commonly referred to as the so-called principles, are extensively studied in college curricula to enhance the understanding of natural processes. These principles are specifically designed to foster the development of the human mind, albeit with limited observation of the natural world. In this context, the following is pertinent classification.

6.1 Calculus & Change

This is an essential discipline within mathematics, offers a robust structure for comprehending the concept of change. It enables us to articulate the fluctuations of various quantities such as position, velocity, and acceleration over time, as well as forecast their forthcoming patterns. The significance of calculus lies in its ability to model a diverse array of natural occurrences, encompassing the movement of celestial bodies to the dispersion of populations. This fundamental branch of mathematics provides a powerful framework for understanding change. and to predict its future behaviour. Calculus is vital for modelling a wide range of natural phenomena, from the motion of planets to the spread of populations.

Calculus:< https://www.thoughtco.com/definition-of-calculus-2311607>

6.2. Calculus and differential equations

To describe the continuous change of variables over time or space, an example is motion of a falling object as supported by the Newton's laws of motion which occur as differential equations. Similarly, the growth of a population of a Nation or groups of nations or the World as a whole can be style-modelled by suitable differential equations dependent on factors of birth rates, death rates, & migration. Alternatively, one can illustrate the ongoing alteration of variables over time or space by considering the movement of a descending object, which can be explained using Newton's laws of motion as differential equations. Likewise, the expansion of a nation's population, a group of nations, or the entire world can be represented by appropriate differential equations that rely on factors such as birth rates, death rates, and migration.

So, differential equations relate the rate of change of a quantity to its current value. They are used to model a vast array of natural processes, including the flow of fluids, the vibrations of strings, and the growth of populations. By solving differential equations, we can gain insights into the dynamics of these systems and predict their future behaviour.

$$\frac{d}{dx}(x) = 1 \qquad \frac{d}{dx}(a) = 0$$

$$\frac{d}{dx}(u \pm v \pm \cdots) = \frac{du}{dx} \pm \frac{dv}{dx} \pm \cdots \qquad \frac{d}{dx}(au) = a\frac{du}{dx}$$

$$\frac{d}{dx}(uv) = u\frac{dv}{dx} + v\frac{du}{dx} \qquad \frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$$

$$\frac{d}{dx}\left(u^n\right) = nu^{n-1}\frac{du}{dx} \qquad \frac{d}{dx}\log_a u = \frac{\log_a e}{u}\frac{du}{dx}$$

$$\frac{d}{dx}a^u = a^u \ln a \frac{du}{dx}$$

$$\frac{d}{dx}e^u = e^u\frac{du}{dx} \qquad \frac{d}{dx}u^v = vu^{v-1}\frac{du}{dx} + u^v \ln u \frac{dv}{dx}$$

Calculus/differential equs:<[https://www.globalspec.com/reference/62245/203279/>](https://www.globalspec.com/reference/62245/203279/)

6.3 Probability & Statistics

Natural processes are unusually characterized by uncertainty and variability. Such things can be measured and quantified. A prime illustration of this is seen in weather forecasts, where the likelihood of rain or snow is presented in termed-estimates of probabilities. In a similar vein, the spread of diseases is analysed using statistical methods that take into account primitive factors such as the rate of transmission and the number of individuals poised to catch disease-inflectional or infections/ symptoms. By deploying such techniques, valuable insights into the patterns and trends of the phenomena which enable us to proceed making informed decisions and take appropriate remedial actions.

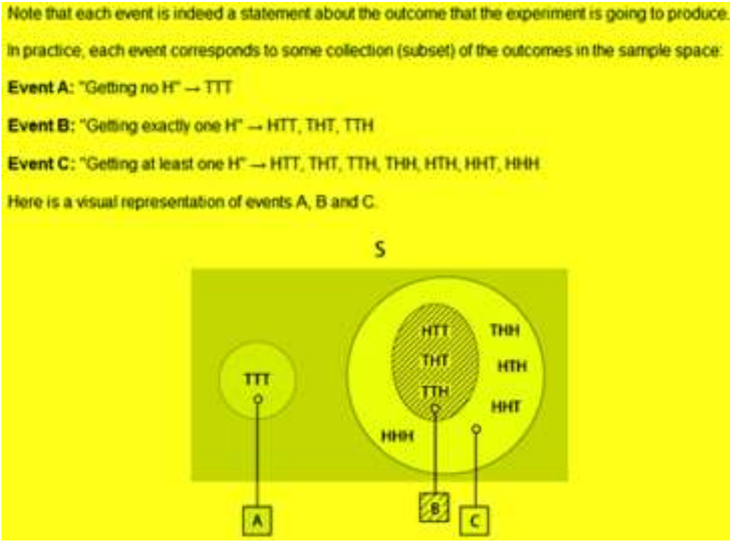
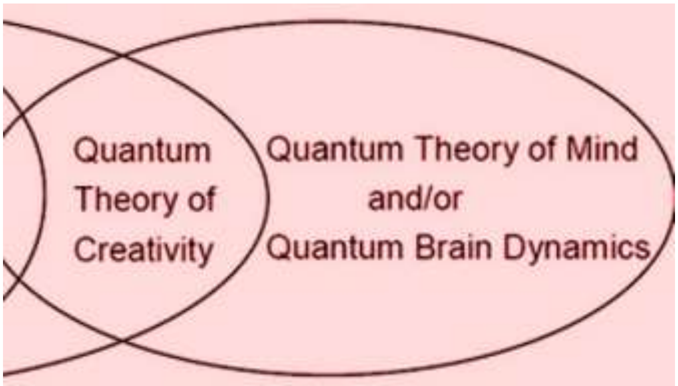


Image source: Probability and statistics :< https://oli.cmu.edu/courses/probability-and-statistics/>

6.4 Chaos theory and nonlinear dynamics

Applied to systems that are mostly always sensitive to initial conditions and can exhibit unpredictable behaviour. Chaotic systems, by their very nature, are highly sensitive to initial conditions and can display unpredictable behaviour. Consider the weather as an example of such a system, where even the tiniest alterations in the starting conditions can result in significant variations in the long-term outcome. Also, ecological systems also exhibit chaotic behaviour, revealing that even fractional changes in the environment can have profound effects on the population of species.



source: Chaos theory & nonlinear dynamics :< https://www.researchgate.net/figure/Relationship-among-the-present-model-chaos-theory-in-nonlinear-dynamical-system-and-the_fig2_322568449>

6.5 Optimization

Enables the best possible solution to a problem, such as the most efficient way for a plant to allocate its resources. Called technique, it is deployed to identify the optimal resolution for a given issue, such as determining the most effective method for a plant to distribute its resources.

6.6 Game theory

This is used to study the interactions between different agents, such as predators and prey or competing species. Game theory, known as the study of interactions between various entities, is utilized to examine the dynamics among different agents. These agents can include predators and prey, as well as species engaged in competition. The scope of game theory extends to encompass the realm of Nature, encompassing natural processes and living beings that are born from eggs or by other means. In other words, Game theory is intended for the study of strategic decision-making and applied to analyse the dynamics between various entities, including predators and prey or rival species, within the realm of Nature. This encompasses the examination of natural phenomena, processes, and organisms that originate from eggs or other means.

6.7 Network theory

This is used to study the structure and function of networks, such as the food web in an ecosystem or the network of neurons in the brain. Alternatively, network theory is resorted to as a recourse to examine the arrangement and operation of networks, such as the ecological food web or the neural network within the brain.

6.8 The motion of a planet around the Sun

This can be described using calculus and differential equations, specifically Newton's laws of motion and the law of universal gravitation. The motion of a planet around the Sun can be described as a natural phenomenon that can be understood through the application of mathematical principles.

6.9 The growth of a bacterial population

This can be described using differential equations that take into account factors like the rate of reproduction and the availability of resources. The expansion of a bacterial community can be explained by employing mathematical equations that consider various factors such as the speed of reproduction and the availability of resources.

6.10 The spread of a wildfire

This can be described using probability and statistics, taking into account factors like the wind speed, the humidity, and the amount of fuel available. Also, the propagation of a forest fire is the phenomenon which could be explained by utilizing probability and statistics, considering variables such as the velocity of the wind, the level of humidity, and the quantity of combustible material present.

6.11 The evolution of a species

The progression of a species can be elucidated by employing game theory and population genetics, while considering elements such as resource competition and sexual selection.

These aforementioned instances are merely a handful of the numerous mathematical principles that serve as the foundation for diverse and fluctuating natural phenomena. Through the utilization of these methodologies, researchers can acquire a more profound comprehension of the environment surrounding us, formulate forecasts regarding forthcoming occurrences, and innovate novel technologies to engage with the natural realm.

7. CONCLUSION

The mathematical principles employed to explain a specific natural phenomenon are contingent upon the characteristics of the phenomenon itself and the desired level of intricacy. Nevertheless, mathematics serves as a potent instrument for comprehending the various aspects of our surroundings, enabling the description of all natural processes in some manner. It is important to highlight that the aforementioned examples only constitute a minor portion of the many mathematical principles that can be utilized to understand natural phenomena. The choice of particular principles that are of utmost importance for a specific process depends on the inherent characteristics of that process. However, by thoroughly grasping these fundamental principles, we can cultivate a greater appreciation for the inherent order and beauty that underlies the seemingly chaotic world around us.

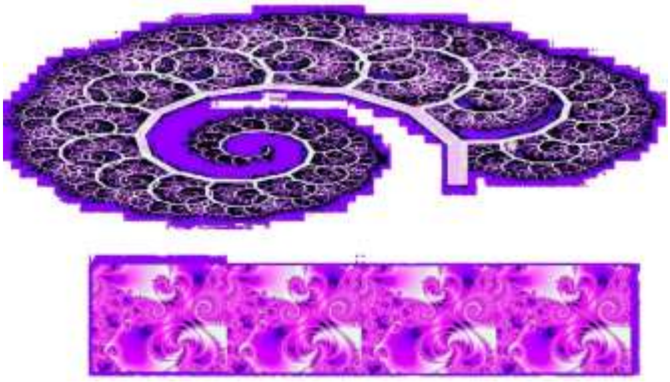


Image Source: <https://en.wikipedia.org/wiki/Fractal><https://matthewjamestaylor.com/fractal-art>

It should be emphasized that the selection of mathematical principles to model a specific natural process is contingent upon the inherent characteristics of the process. Certain processes can be adequately represented by straightforward linear equations, whereas others necessitate more intricate mathematical models. The task for scientists lies in discerning the appropriate mathematical tools that effectively encapsulate the fundamental aspects of the phenomenon under investigation.

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