The Origin of Consciousness in a Biological Framework for a Mathematical Universe

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Introduction

In this essay we take the reader through the creation and evolution of life and consciousness in a biological framework for understanding the universe. The theory of *The Biological Framework for a Mathematical Universe,* proposed in the author's dissertation, asserts that the patterns inherent in biological systems mirror the underlying mathematical principles of the cosmos. Thus, every pattern that comes to manifest from the universe's rudimentary pattern, or "parent-pattern," contains a fundamental biological-pattern inherent to its *function*, revealing the true *objective nature* and purpose of that thing. For example, this objective reality grounded in biology's patterns can be seen in how the ocean's arctic currents and the melting and freezing of Antarctica mimic the circulatory system and a beating heart, or how coffee cups and cars both mimic red blood cells in distributing contents or; how music produced by instruments from the input of fingers mimics proteins produced by ribosomes from the input of RNA; or how the framing of a house mimic the function of a skeletal system; or how socioeconomic and cosmological phenomena mimic cellular order and principles, thus revealing a universal order and *objective truth* to reality. These functional correspondences to patterns in biological systems underly the nature of all things in reality and define the objective reality of our universe—because the universe was initiated with biology's patterns. Recognizing these correspondences enables us to comprehend the objective truth hidden within the subjective nature of our reality—a subjectiveness that is the inherent byproduct of *consciousness*.

Furthermore, this theory postulates that the creation and evolution of life and consciousness are direct consequences of the universe's biologically-patterned processes—thus, *life* is the product of the universe. As a result, the physiology of living organisms can be used as models that help the mind understand these correspondences of the universe, and remain consciously aware of the patterns necessary for survival, especially during complex times. Analogies drawn from biological patterns can explain various phenomena, using Dedre Gentner's approach to analogy. Recognizing and organizing ourselves according to these fundamental biological patterns is crucial for humanity to *consciously* organize itself in harmony with the patterns necessary for its survival as their society/environment become more complex. These patterns enable humanity to harness the potential that life and this biological framework offer—an ancient wisdom that has been expressed in our past, in concepts such as Atman and Brahman (Upanishads), Pnimiyut and Chitzoniyut (Judaism), and Batin and Zahir (Sufism), Emanationism, Panentheism and many more. This idea of a biological framework for a mathematical universe is supported by many scientific studies and concepts.

In this paper the author has connected the dots to reveal the patterns that connect human knowledge in support of this theory of a biological framework for a mathematical universe. Let us begin our journey into the creation and evolution of life and consciousness. **

The Creation and Evolution of Life & Conscious

The biological framework for a mathematical universe asserts that the evolving complexities of these rudimentary biological patterns that are fundamental to the universe have directly resulted in the creation and evolution of life and consciousness. The big bang occurs, marking one of many beginnings of these vast, interconnected systems. This large-scale *biological event* hurdles matter, energy, forces and space through time in patterns that are rudimentary biological in their nature, creating all of the structures in the known universe and on Earth. These same patterns become embedded within the processes of the Earth's environment and come to create and evolve life and consciousness on Earth.

Life and consciousness was created and evolved in tandem from its rudimentary state in cells to its complex state in humans due to evolving complexities in their biologically-patterned environment. As the environment evolved in complexity, so too did the organism and its consciousness evolve in complexity. The patterns within organism's environment's required living organisms to recognize and organize themselves relative to what was necessary for survival. Thus, those organisms that survived were *conscious* for immediate survival patterns in their environment. Those that died from the inability to recognize and organize themselves relative to the patterns necessary for *life* were considered *unconscious* to live and evolve. Therefore, those organisms that died experienced a "miscarriage" of their evolutionary progression, meanwhile those that survived are "birthed" into the chain of evolutionary development of Life.

Over time, this process kept organisms in a constant evolving state of *conscious survival*, or a type of "slavery state of consciousness," preventing the organism to think freely. However, this process developed the physical and conscious faculties of organisms into "pattern recognition engines," necessary for exploring and recognizing patterns for *immediate* survival (life). This pattern recognition engine later developed to a point, in Man, where it recognized patterns necessary to *free itself* from its environment's immediate survival constraints—thereby gaining *conscious sovereignty* and the ability to freely explore its environment and to organize itself accordingly to patterns it recognizes and imagines *freely on its own accord*, thus giving rise to the phenomenon of *subjectivity*.

Still unaware of the patterns of biological correspondence that exists throughout reality, as they have not yet thoroughly explored the patterns within their body and the patterns of their environment to recognize this correspondence exists, humanity begins to build a *superficial cognitive framework* based on the patterns they *apparently* recognize and imagine to be true—some of which overlaps principles in healthy biological systems, thus reinforcing their "valid" understanding of reality, unbeknownst to them.

However, as they evolve their society, it becomes more complex and the patterns necessary to guide them require more precise direction (truth). As they continue to build their superficial cognitive framework to the patterns they imagine, they become out of harmony with those *healthy biological patterns* which establish and sustain life. Like the cellular society of a fetus scaling its society into a baby without the guidance of healthy DNA, human society tries to scale itself without its correct blueprint. Humanity's misalignment with *healthy* biological patterns necessary to establish and sustain life consequently produces many of the socioeconomic problems they experience. Furthermore, the subjectivity around topics, naturally created as a byproduct of conscious sovereignty, reaches a point which prevents humanity from unifying towards common goals. This inability to work together towards common goals threatens the miscarriage of their society, as it would in a cellular society trying to scale itself to a fetus from a zygote—such is the story of The Tower of Babel.

Ultimately, the theory asserts that the purpose of conscious sovereignty is a test for Life; It is a test to see if the organism, Man, and its society can come to explore and recognize the patterns which reveal this biological correspondence that exists amongst everything in reality, *then* abide by it. If Humanity abides by it, they remain **conscious** and are deemed worthy to continue living. If they do not abide by it—in other words if they do not organize themselves to these inherent biological patterns necessary for life, they are deemed **unconscious** and will continue carrying-on their *unconscious behaviors* that will ultimately lead to pain, suffering, and the miscarriage of their society. Then, the entire process starts over again.

Thus, the moral of the story is that humanity *must* pivot its current understanding and behaviors to align itself with biological principles—similar to how human technologies/engineering have pivoted to align with principles of biological systems in the field of *biomimicry*. Human society must align itself with the patterns pertaining to the ***Physics of Life*** in order to continue living, just as an aircraft must align itself with the patterns pertaining to the *Physics of Flight* in order to fly. If not, Life will come crashing down.

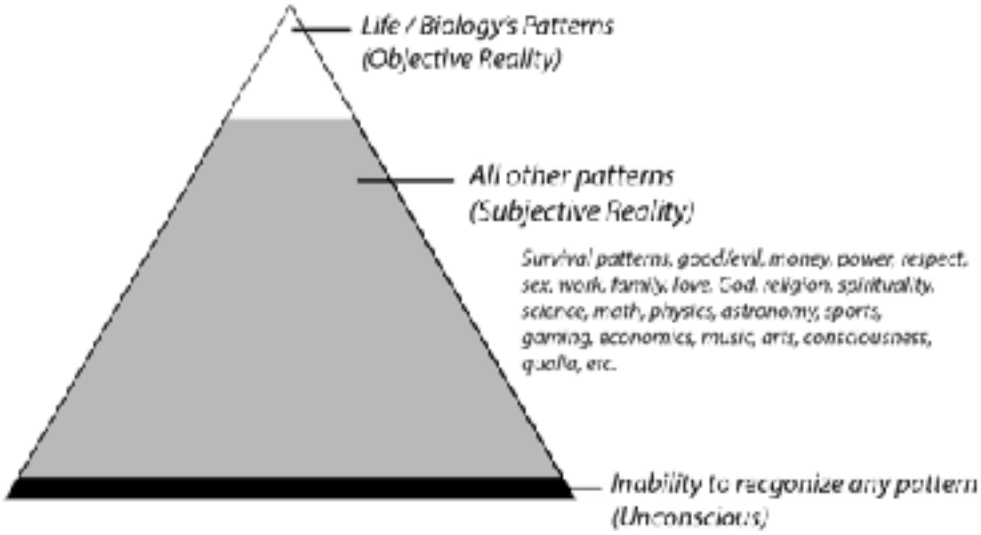
The Labyrinth of Consciousness:

How The Biologically-Patterned Environment
Creates and Develops Life & Consciousness
As Pattern-Recognition Engines, *Then,*
Sets It Free, In Human Form, To Explore
The Patterns of The Universe and of Itself.

The labyrinth represents the evolution in complexity of the rudimentary biologically-patterned environment which creates and evolves life and its consciousness as pattern recognition engines, from its rudimentary state in cells (figure in the center of the labyrinth), to its complex state in humans (figure outside labyrinth). If at any point in the labyrinth the organism cannot progress it is *unconscious*. If it progresses through the labyrinth, it is *conscious*. The progress of the organism through the labyrinth represents the development of this pattern recognition engine, as the labyrinth becomes more complex, the consciousness and physicalities of the organisms must also become more complex, to allow it to properly explore the labyrinth and handle any obstacles so to make its way through to the exit. The exit from the labyrinth represents the *conscious sovereignty* attained through the physical and consciousness development required to recognize patterns which free itself from its environment's immediate survival constraints.

Ultimately, the theory asserts that the purpose of conscious sovereignty (point of exiting the labyrinth) is a test for Life and consciousness; It is a test to see if the organism, Man, and its society can come to explore and recognize the patterns which reveal this biological correspondence that exists amongst everything in reality, *then* abide by it. If Humanity abides by it, they remain **conscious** and are deemed worthy to continue living. If they do not abide by it—in other words if they do not organize themselves to these inherent biological patterns necessary for life, they are deemed **unconscious** and will continue carrying-on their *unconscious behaviors* that will ultimately lead to pain, suffering, and the miscarriage of their society. Then, the entire process starts over again.

Hierarchy of Consciousness */ The Interpretation-Pyramid of Consciousness*



* This figure shows the order of importance in patterns necessary for establishing consciousness. It shows that understanding reality relative to life/biological patterns is most important, as it can best ensure life, which is most important for any living organism. All other patterns are not as important. In the beginning, the only thing that existed were life/biology's patterns. Once living organisms were created from life's patterns, living organisms, had no understanding of these biological patterns—they interpreted a subjective reality based around "survival patterns" necessary to stay in harmony with Life/Biology's [healthy] patterns. As they evolved in complexity due to the complexities of the environment, their subjective reality based around survival patterns also became more complex.

Once organisms gained their conscious sovereignty, in Man—freeing themselves from the survival constraints of their environment, the subjective reality of the organism was populated with an explosion of subjective patterns, all of which overlay these inherent biological patterns (healthy and unhealthy permutations) fundamental to our objective reality. These patterns made more complex their survival patterns (and in most cases created a new paradigm for survival patterns).

It is important to note that the subjective reality is always in accordance with biology's/life's patterns—HOWEVER, its not always in harmony with HEALTHY PATTERNS—this is what creates many of the socioeconomic problems human society experiences. Having an understanding of biology's/life' patterns allows human society to organize itself in accordance to healthy biological patterns that will enable their society to scale within complex environments. See https://perfectpublicoffering.org

Where To Find The Objective Reality Based On Biology's Patterns?

Biological Patterns Observed in **The Universe**:

Cellular Mitosis	→	Laniakea and Perseus-Pisces (Supercluster)
Neuronal Networks	→	Galactic Filaments
Cell Differentiation	→	Star Formation
Cellular Apoptosis	→	Supernovae
Lysosomes	→	Black Holes
Genetic Memory	→	Cosmic Microwave Background (CMB)
Cellular Extracellular Matrix	→	Dark Matter
Electrons Spinning Around Atom	→	Clusters of Starts Orbiting a Black Hole
Inter-organelle Communication	→	Fast Radio Bursts (FRBs)
Various states of a cell (birth, growth, death)	→	Various States of Death predicted for the Universe
Slime Mold	→	Dark Matter

Biological Patterns Observed on **Earth:**

Heart	→	Melting and Freezing of Antartica
Circulatory System	→	Arctic water currents and wind
Digestive System	→	Deserts (Sarah Desert & Haboob)
Kidneys	→	Sea Grass Meadows
Alveoli / Lungs	→	Plants / Trees
Fats (Lipids)	→	Oil and Coal
Epidermis and Dermis (Skin)	→	Earths Magnetic Field and Atmosphere
Interplay Between Organ Systems	→	Interplay between various species of organisms

Biological Patterns Observed in The Organization and Properties of **Human Society**

Cell	→	Person
Tissue	→	Organization
Organ	→	Industry
Organ System	→	Economic Sector
Blood (establishing fundamental needs)	→	Money (establishing fundamental needs)
Cellular-Economic Phenomena	→	Socioeconomic Phenomena
Order & Principles in Cellular Society	→	Order & Principles in Human Society

Biological Patterns Observed In **Human Innovation:**

Red Blood Cell	→	Cup, Cars, Amazon Packages, Envelops
Proteins Produced From Ribosomes	→	Music Produced From Instruments
Skin	→	Clothing, Table Cloth, Sun Screen, Umbrella
Eye	→	Camera, TV/Computer/Phone Screen, Windows
Signal Molecules (Communication)	→	WiFi, BlueTooth, Light (Protons), Language
Skeleton	→	Chair (frame), Umbrella (frame), House (frame)
Fat/Lipids	→	Batteries, Reservoirs (Water),
Ear	→	Microphone, Speakers
Pulmonary Valve (heart)	→	Doors

For more human innovation examples: **www.AskNature.org/innovations**

Scientific Support

Scientific Studies: Analogies Between Astrophysics and Biology

Analogies between cosmological phenomena and biological phenomena have been explored in various scientific studies, providing insights into the similarities in the organization, dynamics, and evolution of complex systems across vastly different scales. Here is a list of credible scientific studies and sources that delve into these analogies:

1. Cosmic Web and Neural Networks: Vazza, F., & Feletti, A. (2020). "The quantitative comparison between the cosmic web and the neuronal network." *Frontiers in Physics*, 8, 525731.

Summary: This study quantitatively compares the large-scale structure of the universe (the cosmic web) with the structure of the brain's neuronal network, highlighting striking similarities in their complexity and connectivity.

2. Galactic Filaments and Biological Filaments: Bassett, B. A., & Hlozek, R. (2010). "Baryon acoustic oscillations." *Dark Energy: Observational and Theoretical Approaches*, 246-278.**

Summary: This book chapter discusses baryon acoustic oscillations and compares the distribution of matter in the universe to biological filaments, such as those in the cytoskeleton of cells.

3. Star Formation and Cellular Differentiation: Elmegreen, B. G., & Scalo, J. (2004). "Interstellar turbulence I: Observations and processes." *Annual Review of Astronomy and Astrophysics*, 42, 211-273.

Summary: This review explores the role of turbulence in star formation and draws analogies to the processes of cellular differentiation and development in biological systems.

4. Supernovae and Cellular Apoptosis: D'Arcy, M. S. (2019). "Cell death: A review of the major forms of apoptosis, necrosis and autophagy." *Cell Biology International*, 43(6), 582-592.

While this review focuses on cell death, the mechanisms of apoptosis can be compared to the process of supernovae in their roles of both destruction and the promotion of new growth (in galaxies and tissues, respectively).

5. Black Holes and Cellular Lysosomes: King, A. (2015). "Black holes, galaxy formation, and the MBH-σ relation." *Annual Review of Astronomy and Astrophysics*, 53, 115-151.

Summary: This review discusses the role of black holes in galaxy formation, analogous to how lysosomes function in cells by breaking down and recycling cellular components.

6. Cosmic Microwave Background and Genetic Memory: Hobson, M. P., Efstathiou, G., & Lasenby, A. N. (2006). "General Relativity: An Introduction for Physicists." *Cambridge University Press*.

Summary: This textbook includes discussions on the cosmic microwave background radiation and its analogies to genetic memory, as both preserve information from the early stages of their respective systems (the universe and biological organisms).

7. Planetary Orbits and Electron Orbits: Bohr, N. (1913). "On the Constitution of Atoms and Molecules." *Philosophical Magazine*, 26(1), 1-25.

Summary: Bohr's model of the atom draws a direct analogy between the orbits of electrons around a nucleus and the orbits of planets around the sun.

8. Dark Matter and Slime Mold Networks: Tero, A., et al. (2010). "Rules for biologically inspired adaptive network design." *Science*, 327(5964), 439-442.

Summary: This study on slime mold network formation draws analogies to the distribution of dark matter, emphasizing efficient pathfinding and network optimization.

9. Looks at structural similarities between brains and cosmos: Benettin, G., Calzavarini, E., Fanelli, D., & De Lillo, F. (2021). "Are Brains, Galaxies, and the Universe Organized by the Same Laws?" *Entropy*.

Summary: This paper explores the idea that brains and the cosmos might share organizing principles, looking at structural similarities and potential underlying laws governing their formation.

10. Analogies between cosmic and biological processes: Eric Chaisson, "Cosmic Evolution: The Rise of Complexity in Nature" (2001).

Summary: This book discusses the increasing complexity in the universe and draws analogies between cosmic and biological processes, including star formation and cell differentiation.

11. Discusses the parallels between biological and astronomical processes: Peter Ward and Joe Kirschvink, "A New History of Life: The Radical New Discoveries about the Origins and Evolution of Life on Earth" (2015).

Summary: This book presents an integrative view of life's history and discusses the parallels between biological and astronomical processes, touching upon star formation and cell differentiation.

Scientific Studies: Analogies Between Biological to Earth Processes

Here are some scientific studies and articles that establish analogies between Earth processes and biological processes:

1. Atmospheric Circulation and Blood Circulation: Schneider, T., & Walker, C. C. (2006). "Self-organization of atmospheric macroturbulence into critical states of weak nonlinear eddy-eddy interactions." *Journal of the Atmospheric Sciences*, 63(6), 1569-1586.
   Summary: This study examines the self-organization of atmospheric circulation, drawing analogies to how blood circulation in organisms is regulated and maintained.

2. Ecosystem Metabolism and Cellular Metabolism: Odum, H. T. (1969). "The strategy of ecosystem development." *Science*, 164(3877), 262-270.
   Summary: Odum's work on ecosystem metabolism compares the energy flow and nutrient cycling in ecosystems to metabolic processes within cells.

3. Geochemical Cycles and Biochemical Cycles: Falkowski, P. G., et al. (2000). "The global carbon cycle: A test of our knowledge of Earth as a system." *Science*, 290(5490), 291-296.**
   Summary: This study reviews the global carbon cycle and compares it to biochemical cycles in living organisms, highlighting similarities in carbon processing and regulation.

4. Plate Tectonics and Cellular Movement: Forsyth, D. W., & Uyeda, S. (1975). "On the Relative Importance of the Driving Forces of Plate Motion." *Geophysical Journal International*, 43(1), 163-200.
   Summary: This paper discusses the driving forces behind plate tectonics, drawing analogies to cellular movement and cytoskeletal dynamics in living organisms.

5. Hydrological Cycle and Circulatory System: Hannah, D. M., et al. (2004). "A conceptual model of hydrological connectivity within a floodplain system." *Hydrological Processes*, 18(5), 1205-1222.
   Summary: The study models hydrological connectivity in floodplains, analogizing it to the human circulatory system's function in distributing fluids and nutrients.

6. Ecosystem Succession and Developmental Biology: Clements, F. E. (1916). "Plant succession: an analysis of the development of vegetation." *Carnegie Institution of Washington*.
   Summary: Clements' classic work on plant succession compares the stages of ecosystem development to the developmental stages of organisms.

7. Energy Flow in Ecosystems and Cellular Energetics: Lindeman, R. L. (1942). "The Trophic-Dynamic Aspect of Ecology." *Ecology*, 23(4), 399-417.
   Summary: Lindeman's paper discusses energy flow through trophic levels in ecosystems, drawing parallels to energy transfer and transformation in cellular metabolism.

8. Soil Formation and Microbial Biofilms: Torsvik, V., & Øvreås, L. (2002). "Microbial diversity and function in soil: from genes to ecosystems." *Current Opinion in Microbiology*, 5(3), 240-245.**
   Summary: This study explores soil microbial diversity and function, comparing soil formation processes to the formation and maintenance of microbial biofilms.

There are scientific studies and discussions that analogously describe Antarctica's role in Earth's climate system as similar to a heart's function in a body. This analogy emphasizes how Antarctica regulates vital processes that maintain global climate balance, much like how a heart pumps blood to sustain bodily functions. Here are some references and points that explore this concept:

1. Thermohaline Circulation and Ocean Currents: Broecker, W. S. (1991). "The great ocean conveyor." *Oceanography*, 4(2), 79-89.

Summary: Broecker discusses the role of thermohaline circulation, often referred to as the "great ocean conveyor belt," which is driven in part by the sinking of cold, salty water around Antarctica. This process is crucial for distributing heat and nutrients around the globe, akin to how a heart circulates blood.

2. Antarctica and Global Climate Regulation: Turner, J., et al. (2009). "Antarctic Climate Change and the Environment." *Scientific Committee on Antarctic Research*.

Summary: This comprehensive review discusses how Antarctica influences global climate through its ice sheets, which reflect sunlight, and its role in ocean circulation. These processes help regulate Earth's temperature, much like how a heart regulates blood flow and pressure.

3. Antarctic Ice and Sea Level Rise: Rignot, E., et al. (2011). "Ice-shelf melting around Antarctica." *Science*, 341(6143), 266-270.

Summary: This study examines how melting ice shelves around Antarctica contribute to sea level rise and affect global ocean circulation. The stability of these ice shelves is crucial for maintaining climate equilibrium, analogous to the role of the heart in maintaining circulatory stability.

4. Antarctic Influence on Atmospheric Circulation: Marshall, G. J. (2003). "Trends in the Southern Annular Mode from observations and reanalyses." *Journal of Climate*, 16(24), 4134-4143.

Summary: Marshall's study on the Southern Annular Mode (SAM) highlights how changes in Antarctic atmospheric conditions influence weather patterns globally, similar to how changes in heart function can affect the entire body.

These references highlight various analogies between Earth's processes and biological processes, providing a rich conceptual framework for understanding the interconnectedness of natural systems.

Scientific Studies: Analogies Between Economic and Biological Processes

These studies provide a foundation for understanding how analogies between socioeconomic processes and biological processes can offer insights into the dynamics, resilience, and adaptability of both types of systems. Analogies between socioeconomic processes and biological processes are explored in various scientific studies, particularly in fields such as systems biology, ecology, and economics. Here are some key references that delve into these analogies:

1. Economic Networks and Biological Networks: Schweitzer, F., et al. (2009). "Economic networks: The new challenges." *Science*, 325(5939), 422-425.

Summary: This paper discusses the structure and dynamics of economic networks, drawing parallels to biological networks such as neural or metabolic networks.

2. Market Dynamics and Ecological Systems: Beinhocker, E. D. (2006). "The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics." *Harvard Business Review Press*.

Summary: Beinhocker's book compares market dynamics to evolutionary and ecological systems, emphasizing the role of complexity and adaptive behavior.

3. Urban Growth and Biological Growth: Bettencourt, L. M. A., et al. (2007). "Growth, innovation, scaling, and the pace of life in cities." *Proceedings of the National Academy of Sciences*, 104(17), 7301-7306.

Summary: This study explores urban growth patterns and their similarities to biological growth processes, such as metabolic scaling.

4. Firm Dynamics and Population Ecology: Hannan, M. T., & Freeman, J. (1977). "The population ecology of organizations." *American Journal of Sociology*, 82(5), 929-964.

Summary: Hannan and Freeman apply principles of population ecology to understand the dynamics of organizational populations, including birth and death rates of firms.

5. Epidemiology and Market Fluctuations: Pastor-Satorras, R., & Vespignani, A. (2001). "Epidemic spreading in scale-free networks." *Physical Review Letters*, 86(14), 3200-3203.

Summary: This paper examines how epidemics spread through scale-free networks, drawing analogies to how market trends or financial crises can propagate through economic networks.

6. Resilience in Ecosystems and Economies: Folke, C. (2006). "Resilience: The emergence of a perspective for social–ecological systems analyses." *Global Environmental Change*, 16(3), 253-267.

Summary: Folke's paper discusses resilience in ecosystems and its application to social-ecological systems, including economic systems, emphasizing adaptability and transformation.

7. Supply Chains and Food Webs: Helbing, D. (2013). "Globally networked risks and how to respond." *Nature*, 497(7447), 51-59.

Summary: Helbing discusses the interconnectedness of global supply chains and their similarities to ecological food webs, focusing on vulnerability and resilience.

8. Innovation and Evolutionary Biology: Nelson, R. R., & Winter, S. G. (1982). "An Evolutionary Theory of Economic Change." *Harvard University Press*.

Summary: Nelson and Winter draw on evolutionary biology to develop a theory of economic change, focusing on innovation and adaptation in firms and industries.

Biomimicry

Biomimicry is the practice of studying and emulating nature's designs, processes, and systems to solve human problems. It involves looking to nature for inspiration to create sustainable and efficient solutions by mimicking the strategies found in biological entities and ecosystems. Biomimicry operates on the principle that nature, through billions of years of evolution, has already solved many of the problems we face today in innovative and sustainable ways. https://AskNature.org/Innovations/

Biomimicry not only supports but exemplifies the ideas proposed the "Biological Framework for a Mathematical Universe." It demonstrates how the patterns and principles observed in nature, which are inherently mathematical, can be harnessed to create efficient, sustainable solutions in human technology that is in harmony with the patterns of Life. This alignment between nature's designs and mathematical principles underscores the profound connection between biological evolution and the mathematical underpinnings of the universe, as explored in The Biological Framework for a Mathematical Universe. Here are ten examples of biomimicry, along with sources for further reading:

1. Velcro
Inspiration: The hooks on plant burrs.
Application: Fastening system used in clothing, footwear, and other items.
Source: [Velcro and Burrs](https://www.velcro.com/news-and-blog/2020/february/the-fascinating-history-of-hook-and-loop-fasteners/)

2. Bullet Train Nose
Inspiration: The beak of the kingfisher bird.
Application: Reduces noise and energy consumption in high-speed trains.
Source: [Biomimicry Institute] https://AskNature.org/innovations/

3. Termite Mounds
Inspiration: The natural ventilation system of termite mounds.
Application: Energy-efficient building designs.
Source: [BBC](https://www.bbc.com/future/article/20180208-the-offices-inspired-by-termites)

4. Shark Skin Swimsuits
Inspiration: The texture of shark skin.
Application: Swimsuits that reduce drag and increase speed for swimmers.
Source: [Scientific American](https://www.scientificamerican.com/article/shark-skin-inspires-improved-swimsuit-design/)

5. Lotus Leaf Surface
Inspiration: The self-cleaning properties of lotus leaves.
Application: Self-cleaning surfaces and water-repellent coatings.
Source: [National Geographic](https://www.nationalgeographic.com/science/article/lotus-leaf-inspires-self-cleaning-materials)

6. Beetle Water Collection
Inspiration: The ability of the Namib Desert beetle to collect water from fog.
Application: Water collection devices in arid regions.
Source: [MIT News](https://news.mit.edu/2015/how-desert-beetle-captures-water-0715)

General Scientific Concepts Supporting a Biological Framework for a Mathematical Universe

1. Mathematical Universe Hypothesis: The hypothesis posits that the universe itself is a mathematical structure, thus biological patterns can be interpreted as mathematical patterns, contributing to the order and structure of the universe.

2. Modeling and Analogies: Analogies and models can map biological patterns to other domains, revealing and explaining the biological nature of these domains. See Biomimicry.

3. Systems Theory: This theory emphasizes the interconnectedness of components within a system, supporting the idea that all systems possess biological patterns and are fundamentally biological.

4. Systems Biology: This field studies biological systems holistically, recognizing the interdependency of biological elements, which can be applied to understanding the universe as an interconnected system of biological patterns.

5. Fractal Cosmology: This theory suggests that the universe exhibits self-similar patterns at different scales, similar to living organisms, indicating an interconnectedness between life and the larger universe.

6. Evolutionary Biology: Evolutionary principles suggest that life and living organisms are a direct consequence of the universe's biological processes, with biological patterns shaping the development of systems in reality.

7. Complexity Science: This field studies complex systems and emergent phenomena, suggesting that understanding complex interactions requires considering emergent properties from biological patterns.

8. Universal Laws or Principles: The theory posits that there are universal laws or principles governing both biological processes and other phenomena, supporting the idea of a biological framework for the universe.

9. Mathematical Modeling of Biological Systems: Mathematical frameworks reveal regularities and patterns within biological systems, suggesting that these patterns are present throughout reality. For example, using slime mold to predict the dark matter.

10. Biomimicry: This field supports the idea that systems, processes, and objects in reality reflect inherent biological patterns, providing insights into the fundamental biological principles of human innovation.

11. Living Systems Theory: This theory analyzes complex systems as living systems, supporting the interconnectedness of living systems and the broader biological nature of reality.

12. Huygens' Synchronization and Law of Conservation of Energy: These concepts relate to the transfer of energy and information in systems, such as the universe which creates life, suggesting interconnected biological processes throughout reality.

13. Reaction-Diffusion Systems: These mathematical models describe the emergence and propagation of patterns in biological systems, aligning with the idea that biology defines the framework of the universe.

14. Stephen Wolfram's Models: Wolfram's research on computational irreducibility and cellular automata models supports the theory by highlighting the emergence of complex patterns from local interactions, similar to biological systems.

Biology's Patterns In Mathematical Concepts

Regardless of what field a mathematical equation was first observed, the fact that a mathematical equation exists within the biological domain provides evidence that these mathematical equations may actually originate from the biological framework for the mathematical universe, and therefore emerge in other domains which share a biological correspondence. Below is a list of mathematical equations in biology that have applications outside the field of biology:

- Exponential Growth Equation
- Logistic Growth Equation
- Game Theory
- Diffusion Equations
- Neural Network Models
- Fractal Geometry
- Mendelian Laws of Inheritance
- Optimal Foraging Theory
- Network Theory
- Predator-Prey Model
- Markov Chains
- Chaos Theory
- Michaelis-Menten Equation
- Hary-Weinberg Equilibrium Equation
- Lotka-Volterra Equations
- Reaction-Diffusion Equations
- Fick's Law of Diffusion
- Nernst Equation
- Gompertz Equation

Biological Equations	→	**Applications Outside Biology**
Exponential Growth Equation Observed in population growth, bacterial growth, cell growth, viral replication, tumor growth, neuronal growth, gene expression, protein synthesis, yeast fermentation, and algal blooms.	→	Applied in economics to model population growth, compound interest, and investment growth, among other phenomena.
Logistic Growth Equation Observed in population dynamics, microbial growth, plant population ecology, fish stock dynamics, cancer growth.	→	Used in fields such as ecology, economics, and epidemiology to model population dynamics, resource utilization, and the spread of diseases.
Game Theory Observed in evolutionary stable strategies (ESS), mate choice and sexual selection, parental investment, foraging strategies, territoriality, cooperative hunting, communication strategies, host-parasite interactions, thus provides insights in into various aspects of behaviors, contributing to our understanding of evolution, ecology, and animal behavior.	→	Applied in economics to model strategic interactions among rational decision-makers, such as firms competing in markets, bargaining situations, and auction design.

Biological Equations	→	Applications Outside Biology
Diffusion Equations Observed in gas exchange in the respiratory system, nutrient absorption in the intestines, drug delivery, neuronal signaling, osmosis in cells, cellular transports processes, wound healing, synthetic biology.	→	Used in physics to model heat transfer, fluid flow, and diffusion processes in materials; also applied in finance to model the spread of information or financial instruments in markets.
Neural Network Models Observed in the behavior of interconnected neurons in the brain and nervous system.	→	Applied in artificial intelligence and machine learning for pattern recognition, classification, regression, and optimization tasks across various domains, including image and speech recognition, natural language processing, and autonomous systems.
Fractal Geometry Observed in vascular networks, lung morphology, leaf venation, tree branching, coral reefs, neuronal morphology, geographical features, microbial aggregates, genomic sequences.	→	Utilized in computer graphics to generate realistic natural landscapes, textures, and visual effects; also applied in physics, engineering, and finance to model complex structures, rough surfaces, and irregular phenomena. Fractal geometry applies in galactic structures, cosmic web, interstellar medium, stellar clusters, cosmic microwave background, solar system dynamics, large-scale filaments, cosmic ray propagation. Fractal geometry can be applied in topography and terrain, fracture networks, seismicity and earthquakes, coastal erosion and shorelines, vegetation patterns, hydrology and river networks, soil erosion and landforms, and cloud and weather patterns.
Mendelian Laws of Inheritance Observed in the transmission of genetic traits from parents to offspring, providing the foundation for understanding genetic inheritance patterns in various organisms.	→	Applied in genetics and biotechnology to predict and understand patterns of inheritance of traits in organisms, but also used in forensic science, paternity testing, and animal breeding.

Biological Equations	→	Applications Outside Biology
Optimal Foraging Theory A principle in behavioral ecology that predicts the behavior of organisms when they are search for food to maximize their energy intake while minimizing the energy expended in obtaining it. This mathematical model can be observed in in patch foraging, prey selection, dietary consumption, time allocation, optimal migration, territoriality, central place foraging.	→	Used in ecology and economics to model decision-making processes in resource acquisition and energy expenditure by animals, but also applied in human decision-making, marketing strategies, and consumer behavior.
Network Theory Observed in gene regulatory networks, protein-protein interaction networks, metabolic networks, ecological networks, neural networks, epidemiological networks, and cellular signaling networks.	→	Applied in sociology, computer science, and transportation engineering to analyze and model social networks, communication networks, and transportation networks.
Predator-Prey Model Observed in the dynamics of interactions between predator and prey populations. These models help understand changes in population densities, behaviors, and environmental factors influence predator and prey populations over time.	→	Utilized in ecology to model interactions between predator and prey populations, but also applied in economics to analyze market dynamics, and in epidemiology to study disease transmission dynamics.
Markov Chains Observed in the various processes involving discrete states and probabilistic transitions seen in population dynamics, molecular evolution, gene prediction, protein structure prediction, and sequence alignment, ecological succession, cellular signaling pathways, neuronal dynamics, and epidemiological models.	→	Applied in finance to model asset prices and stock market movements; used in computer science for modeling randomized algorithms, web page ranking algorithms, and stochastic processes in networks.
Chaos Theory Observed in various biological systems where complex dynamic and unpredictably behavior are observed, such as heart rate variability, brain dynamics, population dynamics, genetic regulatory networks, ecological systems.	→	Utilized in physics, meteorology, and fluid dynamics to study deterministic systems that exhibit complex, unpredictable behavior over time; also applied in cryptography, signal processing, and economics to analyze and model chaotic systems.

Biological Equations	→	Applications Outside Biology
Michaelis-Menten Equation Observed in the kinetics of enzyme-catalyzed reactions	→	Applied in fields like pharmacology, biochemistry, and biotechnology to optimize enzyme reactions, drug metabolism, and substrate concentration in biochemical assays.
Hary-Weinberg Equilibrium Equation Observed within the evolutionary processes shaping genetic variation within populations.	→	Used in population genetics and evolutionary biology to study allele frequencies and genetic equilibrium, but also applied in forensic science and paternity testing.
Lotka-Volterra Equations: Observed in predator-prey interactions in forest ecosystems, marine food webs, insect-plant infections, predator-prey interactions in grassland ecosystems, freshwater ecosystems.	→	Applied in ecology, economics, and game theory to model predator-prey interactions, competition, and population dynamics in various ecosystems and social systems.
Reaction-Diffusion Equations: Observed in pattern formations in biological systems, morphogenesis, and other complex biological phenomena.	→	Used in physics, chemistry, and material science to model diffusion processes, pattern formation, and chemical reactions in diverse systems.
Fick's Law of Diffusion: Observed gas exchange in respiratory systems	→	Applied in fields such as physiology, engineering, and environmental science to model gas exchange in lungs, drug delivery through membranes, and pollutant dispersion in air or water.
Nernst Equation: Observed in relating the membrane potential of a cell to the concentration gradients of ions across the cell membrane—calculating the equilibrium potential for a given ion based on its intra- and extracellular concentrations.	→	Applied in electrochemistry, analytical chemistry, corrosion science, energy storage and conversion technologies such as fuel cells, sensor technologies, environmental monitoring, and process control. Utilized in electrochemistry, neuroscience, and analytical chemistry to calculate electrode potentials, predict ion behavior, and measure ion concentrations in solutions.
Gompertz Equation: Observed in tumor growth, microbial growth, population dynamics, cellular growth/aging.	→	Applied in economics, finance, demographics, engineering, technology adoption, market saturation, urbanization, population aging, mortality rates.

The Phenomenon of Analogy: A Result of The [Biological] Parent-Pattern Underlying The Universe

Our theory asserts that the phenomenon of analogy is a result of this "biological parent-pattern" that underlies the fabric of reality/universe—connecting all patterns. Thus, every analogy that can be mapped shares an underlying biological pattern that allows for that analogy to exist between two non biological domains. Here are examples of how biological patterns explain each analogy:

1. A library is to books as a gallery is to art.
   - Biological Pattern: Just as a library stores books for retrieval and use, cellular structures like the nucleus store genetic information (DNA) for cellular function and replication. A gallery displays art, similar to how cells display proteins on their surfaces for signaling and interaction.

2. A foundation is to a building as a thesis is to an essay.
   - Biological Pattern: Foundations provide stability and support for buildings, similar to how skeletal structures (e.g., bones) provide support for the body. A thesis provides the main argument for an essay, akin to how DNA provides the genetic blueprint for an organism's development.

3. A recipe is to a chef as a map is to an explorer.
   - Biological Pattern: Recipes guide chefs in preparing meals, similar to how genetic instructions (mRNA) guide ribosomes in synthesizing proteins. A map guides explorers, similar to how signaling pathways direct cellular movement and function.

4. A microphone is to a singer as a brush is to a painter.
   - Biological Pattern: Microphones amplify a singer's voice, similar to how enzymes amplify biochemical reactions. A brush enables a painter to create art, similar to how specialized cellular structures (e.g., cilia) enable specific functions.

5. A password is to an account as a key is to a door.
   - Biological Pattern: Passwords grant access to accounts, similar to how receptors and ligands interact to allow cellular communication and response. Keys unlock doors, akin to how enzymes catalyze reactions by fitting specific substrates.

6. A melody is to a song as a plot is to a story.
   - Biological Pattern: Melodies provide structure to songs, similar to how the cytoskeleton provides structure to cells. Plots give coherence to stories, similar to how regulatory sequences control gene expression and coherence in genetic information.

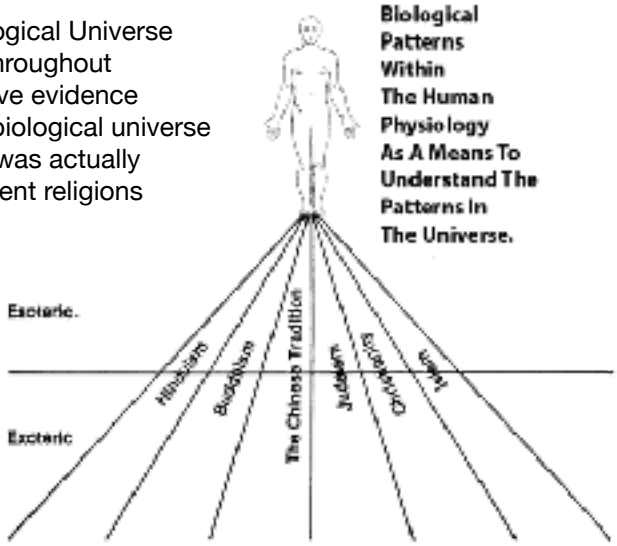
7. A spark is to a fire as an idea is to innovation.
   - Biological Pattern: A spark ignites a fire, similar to how a stimulus (e.g., a signaling molecule) triggers a cellular response. An idea sparks innovation, similar to how mutations can lead to evolutionary changes.

8. A stage is to an actor as a court is to a basketball player.
   - Biological Pattern: Stages provide a platform for actors to perform, similar to how the extracellular matrix provides a scaffold for cellular attachment and interaction. Courts provide a space for basketball players, similar to how tissues provide a context for cellular function.

9. A lens is to a camera as a window is to a house.
   - Biological Pattern: Lenses focus light for cameras, similar to how the eye's lens focuses light onto the retina. Windows allow light and visibility into houses, similar to how cell membranes regulate the passage of substances.

Historic, Religious, Philosophical Support

" The science of a biological Universe was misunderstood throughout human history. We have evidence that the science of a biological universe may have been what was actually conveyed across ancient religions and philosophies."



"*The body, and it alone is capable of making visible what is invisible, the spiritual and divine. It was created to transfer into the visible reality of the world, the invisible mystery hidden in God from time immemorial, and thus to be a sign of it.*" —Pope John Paul II (*Theology of the Body*, Feb. 20, 1980).

Our research into *The Biological Framework for a Mathematical Universe* provides evidence that our ancient religious and historical ideas were actually expressing ideas of understanding the biological patterns of the universe through an understanding of the biological patterns present within ourselves (microcosm and macrocosm), however our research indicates that humanity has misinterpreted this science as metaphor and spiritually. In this section of the essay, we show how concepts from various cultures and time periods in human history may have actually been trying to express this biological framework to the universe.

1. **Atman & Brahman** (Upanishads): Within the context of a biological framework for a mathematical universe, the Atman and Brahman can be understood as representing the biological patterns within human physiology and the universe, respectively. Atman, the innermost essence or soul, mirrors these biological patterns within an individual, while Brahman, the ultimate reality, reflects the same patterns on a universal scale. By comprehending the biological patterns within oneself (Atman), one can gain insight into the broader biological framework of the universe (Brahman), highlighting a profound connection between individual self-knowledge and universal understanding

2. **Pnimiyut & Chitzoniyut** (Kabbalah, Judaism): the concepts of Pnimiyut (inner dimension) and Chitzoniyut (outer dimension) in Jewish mysticism may have been trying to express the idea that the universe operates on a biological framework, with Pnimiyut reflecting the underlying biological patterns and processes (objective reality), and Chitzoniyut representing their observable/apparent patterns manifestations (subjective reality).

3. **Batin and Zahir** (Sufism, Islam): The concepts of Batin (inner reality) and Zahir (outer reality) in Sufism may have been trying to express the ideas of the biological framework for a mathematical universe, with Batin representing the hidden biological patterns underlying existence, and Zahir representing their observable manifestations in the physical world

4. **Microcosm & Macrocosm:** The concepts of microcosm and macrocosm may have been trying to express the ideas presented in the biological framework for a mathematical universe by illustrating how the smallest entities and patterns within an organism (microcosm) reflect and are interconnected with the vast, overarching systems of the cosmos (macrocosm), both governed by the same fundamental biological principles.

5. **Incarnation** (Religious Concept): The concept of incarnation in the Bible may have been trying to express the ideas within the biological framework for a mathematical universe by suggesting that the divine essence, represented by intricate biological patterns, manifests physically in living beings, exemplifying how the universe's fundamental structure is embodied in human form.

6. "**God created man in his own image**…" (Genesis, 1:27): Can be interpreted as "The Universe created man in its own patterns…"

7. **Emanationism:** The concept of emanationism may have been attempting to express the ideas presented in the biological framework for a mathematical universe by suggesting that the universe and all its components "flow" from a fundamental biological principle, much like how life and its processes emerge from the patterns encoded within DNA

8. **Anima Mundi:** The concept of anima mundi may have been trying to express the ideas presented in the biological framework for a mathematical universe by suggesting that the interconnectedness and life-force animating all things in the cosmos are actually manifestations of underlying biological patterns that unify and govern all of physical and conceptual reality.

9. **Panentheism:** The concept of panentheism may have been trying to express the ideas presented in the biological framework for a mathematical universe by suggesting that the divine presence, which permeates and transcends the universe, is actually the fundamental biological patterns that underlie and connect all aspects of reality.

10. **Theosophy:** the concept of theosophy may have been trying to express the ideas presented in the biological framework for a mathematical universe by suggesting that all spiritual and material forms in the universe are manifestations of a fundamental biological pattern that governs and connects all existence.

11. **Ahimsa:** the concept of ahimsa, which emphasizes nonviolence towards all living beings, may have been trying to express the ideas presented in the biological framework for a mathematical universe by highlighting the interconnectedness of all life and the inherent value of each living entity as part of a universal biological pattern.

12. **Animism:** the concept of animism, which attributes spiritual essence to all entities, may have been trying to express the ideas in the biological framework for a mathematical universe by suggesting that the inherent biological patterns in all objects and beings are a manifestation of the universe's underlying mathematical structure which is biological in nature, biological in its patterns.

13. **The Circled Dot** (The Monad, or The Absolute) : the concept of the circled dot used by the Pythagoreans may have been trying to express the idea that the universe's fundamental nature is biological, resembling the structure and function of a single-celled organism, aligning with the biological framework for a mathematical universe.

14. **Stoic Physics:** The concepts in Stoic physics, particularly the idea of the "logos" as a rational, ordering principle that permeates the cosmos, may hypothetically have been trying to express the same fundamental principles found in the biological framework for a mathematical universe, where the biological patterns observed in living organisms reflect the underlying order and rationality of the universe itself.

15. **The Great Chain of Being:** Hypothetically, the Great Chain of Being might have been trying to convey that the hierarchical structure of all matter and life is based on fundamental biological patterns, mirroring the interconnected and organized framework proposed in the biological model of a mathematical universe.

16. **The Pentagram** (Eliphas Levi, *Transcendental Magic*): "[The Pentagram] is "the sign of intellectual omnipotence and autocracy… It is the sign of the Word made flesh; The pentagram is the figure of the human body, having four limbs and the single point [at the top] representing the head." […] "the Pentagram is called the Sign of the Microcosm, and it represents what the Kabalists of the book of Zohar term the Microproposopus." […] "The complete comprehension of the Pentagram (i.e., Human body) is the key of the two worlds. It is absolute philosophy and natural science." —Eliphas Levi

17. **The Principle of Correspondence** (Hermeticism): The Hermetic Principle of Correspondence, stating "as above, so below," may have been trying to express that the same mathematical and biological patterns governing life at the microscopic level also apply to the entire universe, highlighting a unified, scalable framework underlying all existence

18. **Namaste:** Meaning "I bow to the Divine within you." Or "The Divine within me acknowledges the divine within you" may have been trying to express the ideas acknowledging the sacred biological patterns that connect all living beings and the universe, recognizing the inherent interconnectedness and unity within these patterns.

19. **Know Thyself:** The phrase "Know Thyself" may have been trying to express the importance of understanding the biological patterns within one's own physiology, as a way to grasp the underlying order and structure of the universe. Cataclysm Sentence…

The Cataclysm Sentence & Perennial Wisdom

The **cataclysm sentence** is a "hypothetical one sentence" that could be passed on to the next generation of creatures which would *contain the most information in the fewest words* if, in some cataclysm, all scientific knowledge were to be destroyed. Richard P. Feynman asked this question, replying that his sentence would be the following: "I believe that it is that […] all things are made of atoms—little particles that move around in perpetual motion, attracting each other when they are a little distance apart but repelling upon being squeezed into one another."

However, our paper asserts that *these* following are best for cataclysm sentences:

- "The patterns within your body allow you to reveal and understand the patterns of the universe/reality."
- "The Universe created you in its own image, in the patterns of the Universe, it created you."
- "The patterns of the universe within me acknowledges the patterns of the universe within you."
- "As above, so below. As below, so above." —*Principle of Correspondence*
- "Know thyself" —*Delphic Maxim*
- "Man is the measure of all things." —*Protagoras*
- "The body, and it alone is capable of making visible what is invisible, the spiritual and the divine. It was created to transfer into the visible reality of the world, the invisible mystery hidden in God from time immemorial, and thus be a sign of it."—*Pope John Paul II*

The reason why these sentences above would be chosen to contain the most information, is because they are scientific sentences that expresses the nature of reality. These sentences would inevitably spark curiosities which would jumpstart the exploration of patterns within themselves and around them, which would ultimately lead to philosophy, modern medicine, and sciences, such as the field of biology, etc. The exploration and *documentation* of these patterns will be necessary for the future society to come to the realization of this inherent biological correspondence to reality—to realize everything is connected to biology's patterns. Also, it is important to note that while these above phrases are scientific in their meaning, their spiritual or metaphorical misinterpretation still has significant value in establishing spiritual/religious context that will help "spiritually guide" humanity in a more correct direction during tough times.

Thus, **perennial wisdom,** which are those common motifs seen across many cultures around the world, may actually stem from such "cataclysm sentences," or "cataclysm knowledge" from a prior, more technologically advanced, civilization, such as the story of Mahabhrata. These **Cataclysm Sentences**… are science put in simplistic terms, which may be interpreted as religion, spiritual, until the day that humanity would be able to explore the patterns of our reality and within ourselves thoroughly enough to realize the scientific correspondence.

People did not have an understanding of these patterns to understand the science of this biological correspondence. Thus everything that was interpreted religiously, metaphorically, spiritually. [insert Cataclysm Sentence.]

How to Structurally Map The Objective Reality Based on Biology's Patterns

Dedre Gentner's structure-mapping framework for analogy, titled: *Structure-Mapping: A Theoretical Framework for Analogy*, is based on the idea that analogies can be made by identifying and aligning corresponding structural relationships between two domains. In the case of the theory "The Biological Framework for a Mathematical Universe," this framework can be used to structurally map from the *biological domain* to other *target domains*, revealing and explaining the biological nature of those target domains, thus revealing the objective nature of reality.

In simple terms, here's how Dedre Gentner's framework enables this mapping process:

1. Identify the source domain: The biological domain serves as the source domain, which contains the known biological patterns and structures.

2. Analyze the target domain: Choose a specific target domain that you want to understand in biological terms. For example, if the target domain is a social system, you would examine the structures and relationships present within that domain. If the target was a high speed train and preventing a sonic boom when going through a tunnel, you would example the structures and relationships present within that domain. If the target is a coffee cup, you examine the distribution structures and relationships present within that domain.

3. Identify corresponding structures: Look for structural relationships and patterns in the biological domain that align with those in the target domain. This involves finding similarities in how elements in each domain are organized, connected, and interact.

4. Map the structures: Once the corresponding structures are identified, you can create a mapping between the structures in the biological domain and the target domain. This mapping helps uncover the hidden biological patterns and knowledge within the target domain.

By using Dedre Gentner's structure-mapping framework, we are able to reveal and explain the biological nature of the target domain by identifying and aligning structural similarities with the biological patterns already known in the biological domain. This allows for understanding the *objective nature/truth* of the target domain through the lens of the underlying biological processes and structures which shares a functional correspondence.

Summary

This essay explores the creation and evolution of life and consciousness through the lens of a biological framework for understanding the universe. The theory posits that the patterns inherent in biological systems mirror the underlying mathematical principles of the cosmos. Thus, every pattern that manifests from the universe's "parent-pattern" contains a fundamental biological-pattern inherent to its function, revealing the objective nature and purpose of that thing. Examples include the way ocean currents resemble a circulatory system and how socioeconomic phenomena mimic cellular order. These correspondences suggest that life and consciousness are products of the universe's biologically-patterned processes, and understanding these patterns is crucial for humanity's survival, especially as human society and environment becomes more complex—requiring a truer understanding of reality reality and how to organize themselves within it. The paper further argues that historical and philosophical concepts, such as Atman and Brahman in the Upanishads, Pnimiyut and Chitzoniyut in Kabbalah (Judaism), Batin and Zahir in Sufism (Islam), and many more align with this framework. The essay emphasizes that aligning human society with these biological patterns, as seen in biomimicry, is necessary for continued survival and harmony with the universe. The essay provides scientific studies and analogies supporting these ideas, illustrating how biological patterns are reflected across different domains of knowledge.