



# Emergence of the Universe

# Overview

**Pure Consciousness**



**Dynamics of Pure Consciousness :  
Maharishi's Vedic Mathematics**



**Mathematics**



**The Universe**

# Maharishi's Vedic Mathematics

“Vedic mathematics, being the mathematics of self-referral consciousness, is the mathematics of the relationship between these four values—Samhita, Rishi, Devata, Chhandas.”

-- Maharishi, Absolute Theory of Defence, p. 339.

“Vedic Mathematics is the self-regulating, self-perpetuating, self-sufficient precision tool of self-referral consciousness which spontaneously creates the structuring dynamics [and] holistic structure of the Veda and from this . . . creates the material universe, and with absolute precision of evolution, the ever-expanding universe continues to emerge.”

-- Maharishi, Absolute Theory of Defence, pp. 354–5.

# Modern Mathematics

- + Studies structures and transformations between those structures
- + Examples of Structures
  - + Sets of natural numbers, rational numbers, real numbers, complex numbers
  - + Euclidean n-space, Hilbert Space
  - + Algebraic structures (groups rings fields vector spaces)
- + Examples of Transformations
  - + Ordinary functions like  $f(x) = 2x$
  - + Continuous functions on topological spaces
  - + Homomorphisms on algebraic structures

# Do Mathematical Structures *Exist*?

- + Groups first appeared in mathematics in the 1850s. Did they exist also in the 1700s before they were “discovered” or were they “created” in the 1850s? What about the natural numbers?
- + The view that mathematical structures have an objective existence in some way, not dependent on the mathematician, is known as *Platonic realism*
- + *Godel* embraced Platonic realism, claiming it was vital to his discovery of the Incompleteness Theorems
- + Plato held that mathematical structures—at least those known in that era, such as the natural numbers and Euclidean space—were in fact fundamental patterns of existence, which he called forms, eternal and unchanging, imprinted as archetypes on the human soul.
- + Makes it possible to recognize structures like triangles and squares, but also more subtle patterns.

# Maharishi's Remarks

- + Vedic Mathematics is the common basis of all numbers, number systems, and mathematical structures, which are available in various branches of modern Mathematics.  
-- Maharishi, Absolute Theory of Defence, p. 371
- + Vedic Mathematics is that level of Creative Intelligence from which all the number systems and all mathematical structures systematically and sequentially emerge in the most orderly way. . .  
-- Maharishi, Absolute Theory of Defence, pp. 340-1
- + Question: From this perspective, could mathematical structures be nothing but creations of waking-state intellects?

# More from Maharishi

Despite its exalted source, modern mathematics has some difficulties:

- + “The objective approach to modern mathematics does not allow the subjective value of the individual to be always mathematically precise; it is only the subjective approach of Vedic Mathematics that enables the individual to be always precise and orderly—to spontaneously compute all the Laws of Nature necessary to fulfill every desire.”  
-- Maharishi, Absolute Theory of Defence, p. 388.
- + “Vedic Mathematics is the mathematics of the Ultimate Reality, and modern mathematics is the field of the “notion” of reality... Born of notion means born not of reality but of the idea of reality, the shadow of reality. “  
-- Maharishi, Absolute Theory of Defence, pp. 558-59.

# Mathematical Structures: More Than Concepts

- + The content of mathematics is derived directly from Maharishi's Vedic Mathematics, but modern mathematics fails to *recognize* the full value of the structures it studies
- + Being more than mere concepts, perhaps mathematical structures have their own *organizing power*



# Is the Ultimate Nature of the Universe *Mathematics Itself?*

- + Maharishi: "Creation arises from the natural numbers 1, 2, 3, . . ."
- + Maharishi: The ever-expanding value of the universe, in terms of an infinity of numbers, is the natural characteristic feature of the Absolute Number, which enables all numbers to function from their common basis. It is this effect of the Absolute Number on all numbers that actually initiates and maintains order in the ever-evolving, infinite diversity of the universe" (pp. 614–5).

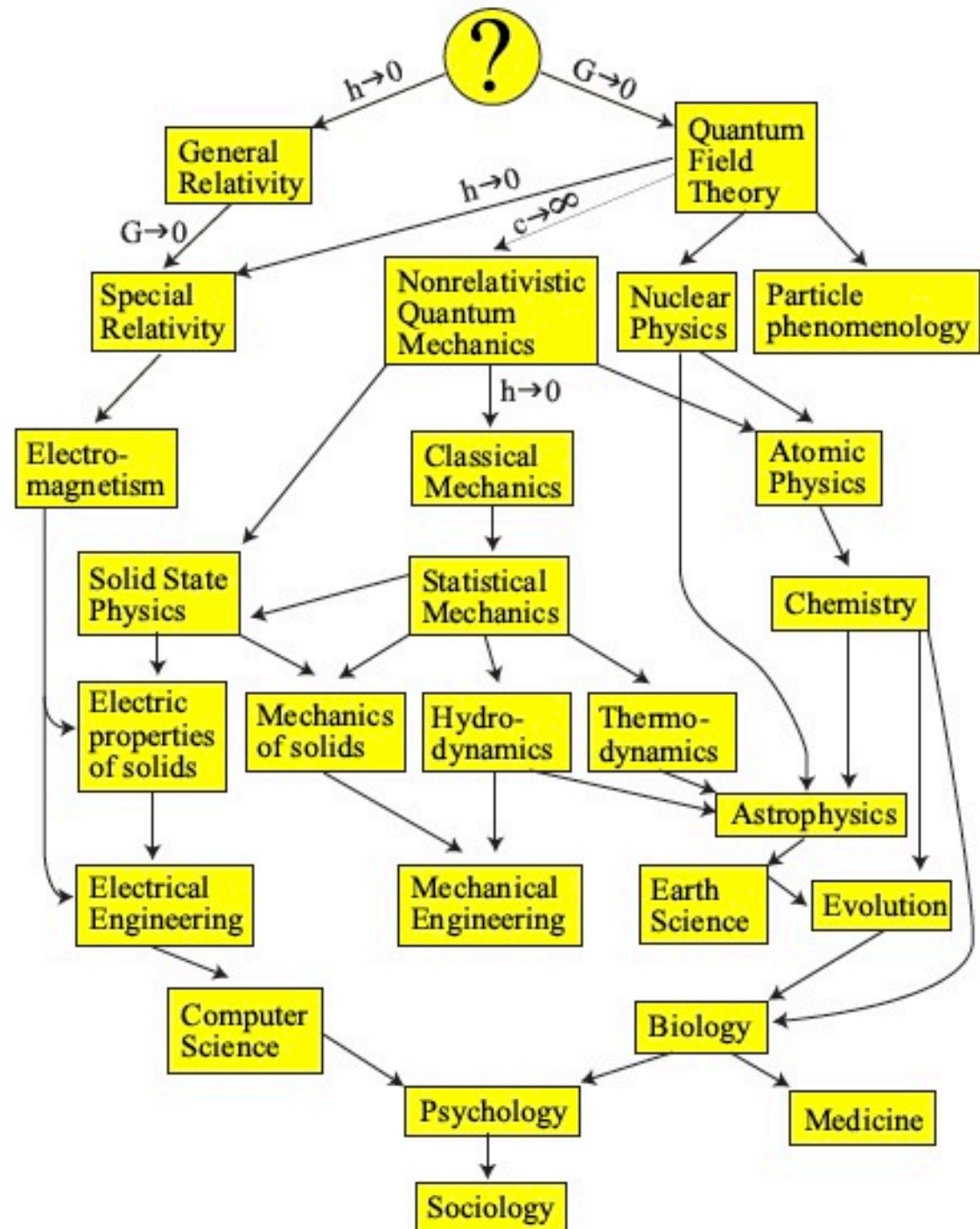
# Perspectives from Other Traditions

- + The Pythagorean school was known for its slogan, “All is Number”
- + Philolaus, declared, “All things which can be known have number; for it is not possible that without number anything can either be conceived or known.”
- + Plato held that the fundamental elements of the universe—earth, fire, water, air—were expressions of the forms of four Platonic solids.
- + Laozi, in the Daodejing, suggests that the universe arises from sequential unfoldment from Dao to One to Two to Three to all things.

# Tegmark's *Mathematical Universe Hypothesis* (MUH)

- + Tegmark is a quantum cosmologist at MIT
- + Explains that theories in physics have 2 components:
  - + Equations
  - + Baggage - "words that explain how [the equations] are connected to what we humans observe and intuitively understand."
- + Example: Quantum mechanics: equations plus 3 postulates (the postulates are baggage)

Ratio of mathematics to baggage increases as one climbs the tree



# Physics As Mathematics

## Tegmark's Perspectives

- + Top of the chart represents a theory of everything. This level will have zero baggage.
- + Universe is isomorphic to a mathematical structure – therefore, the universe is a mathematical structure
- + What if universe has properties other than those of the mathematical structure it is isomorphic to? Then these would have no observable effects
- + Math structures are static,, what about the dynamism of the universe? But by special relativity, universe is also a completed whole, populated with world lines through spacetime

# Examples of Mathematical Structures in Physics

- + *Newtonian Gravity of point particles*: Curves in  $\mathbb{R}^4$  minimizing the Newtonian action
- + *General Relativity*: A 3 + 1-dimensional pseudo-Riemannian manifold with tensor fields obeying partial differential equations of, say, Einstein-Maxwell theory, with a perfect fluid component.
- + *Quantum Field Theory*: Operator-valued fields on  $\mathbb{R}^4$  obeying certain Lorentz-invariant partial differential equations and commutation relationships, action on an abstract Hilbert space

# Problems in the Tegmark Approach

- + The mathematical structures that *are* the universe or parts of the universe must be accessible, knowable, and therefore mathematically computable. But – real numbers, essential for modern physics approach, are (with measure zero exceptions) uncomputable.
- + Tegmark's Resolution: Abandon the continuum in favor of discrete approximations
- + Consequence: Noncomputable mathematics will eventually erode away

# Supplementing with MVS

- + The Gita declares “Unfathomable is the course of action.”
- + One does not expect to grasp all the details of the universe using computable means or even the intellect itself
- + Mathematical structures, arising as eternal patterns of consciousness emerging from the flow of Vedic Mathematics will exhibit Nature’s logic rather than ordinary logic
- + We therefore expect both computable and noncomputable elements in the mathematical structure of the universe – certain aspects of the universe will remain beyond the grasp of the intellect.



# Sequential Unfoldment

- + Pure consciousness, by virtue of being conscious, assumes the roles of Knower, Process of Knowing, and Known (Rishi, Devata, Chhandas).
- + Maharishi's Vedic Mathematics gives expression to the dynamics of pure consciousness knowing itself.
- + Maharishi's Vedic Mathematics, in its unfolding dynamics, gives rise to the natural numbers and all mathematical structures. These structures are invisible, eternal patterns of consciousness. Although modern mathematics has interpreted these structures as mere concepts, their reality, as direct expressions of Maharishi's Vedic Mathematics, is rooted in their source in pure consciousness.

# Sequential Unfoldment

- + Among the countless mathematical structures that arise as patterns of consciousness, certain rather complex structures show up as inhabitable universes.
- + Our universe is a mathematical structure that captures the full history, past, present, and future, of the universe, in accord with the perspective of special relativity (according to which time is an illusion).