



# PHYSICS OR MATHS? MATHS OR PHYSICS

## THE INSEPARABLE BOND

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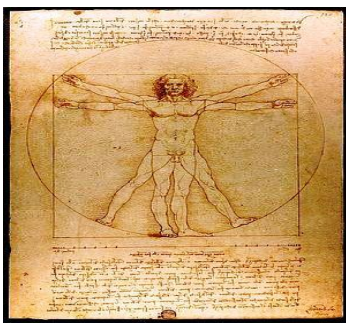
### ABSTRACT

*We human beings are highly spiritual animals, it occurs not by chance that when we study natural philosophy (physics) We use abstract axioms to describe the universe namely maths to derive reality. The 'eerie ghost in the detail' that forecasts a shadow is actually math. I discuss in layman terms why physics is not only maths but also a set of Neuro- psychologically wired philosophical axioms posited in mathematical rubric*

### The origin of Maths

Maths is a Rudimentary cognitive function by which the brain assigns meaning –symmetry identity and relationship to energy, matter around us. Maths is innately hard wired into us and the universe to aid our spatial motion in the universe/s. It is from this experience of the world that we get Natural philosophy (physics). At Foundational Levels Purity, harmony and Beauty rules the Landscape. Unpolluted Mathematical objects, theorems and physics share a roof. No laws broken maths easily sells as Physics, Physics as maths to a critic- Not even wrong.

The universe and all its responsibilities is a computer we inhabit a background between  $0^{\circ}$  and 2.73 K, this allows for supercomputing at Qubit levels, if matter and energy were the hardware then a branch of maths in the name Quantum mechanics emanates, everything including us humans are conditioned at Foundational Levels to bring out this attribute called Numerosity;- Our brains themselves are congress of organized matter and energy in sync and Resonance to the universe have natural perception to numbers. Carl Sagan once retorted of us humans as **'The universe contemplating itself'**



COURTESY Luc Viatour [www.Lucnix.be](http://www.Lucnix.be)

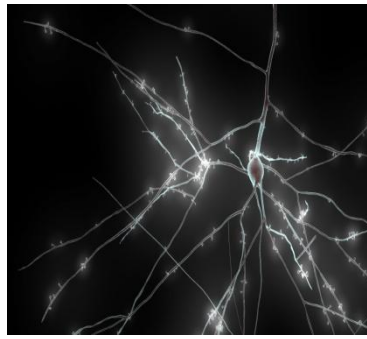
### Vitruvian man

Rene Descartes once put forth the Brain in vat scenario, The brain in an organic supercomputer that mimics the universe; it presents to us only one side of the reality we must therefore employ maths as a run time engine to

learn more about the universe or the brain for that purpose. Discoveries in the Theoretical physics impart on the Neuroscience and medicine and vice versa.



**Galactic filamentation** courtesy Wikipedia



**Human neuron network**, [www.humanbrainproject.eu](http://www.humanbrainproject.eu)

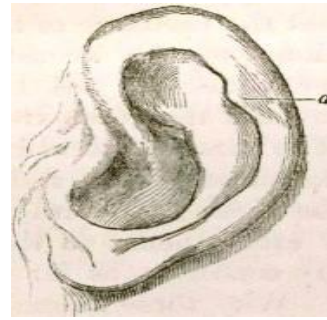
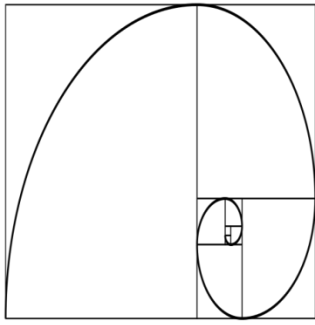
if the Pythagorean notion- Numbers form the purest of ideas. Then we inhabit a simulation. This nullifies the existence of an independent reality so naturally no entity in the universe exists on its own. To me Complexity is the sum total (plural) of Repeated simplicity. Therefore it does not surprise me to have –A tool of the trade-maths describe the trade itself. A venture which it was conceptually inherent to. Weird it seems that the monkey lives on a tree and is able to describe the tree, its stranger when the tree defines the monkey too

For maths its universally accessible to all entities in the universe, Subitiation (counting) is what bled the concept of Time (Duration of Physical events) Time is infinite, The mathematical symbol  $\infty$  (infinity) is mans way of meaning Eternity. The universe is infinite- with no boundaries, occurring in repetitive eternal cosmic cycles yet can be contemplated on a Geometrical shape –a circle. Ancient civilizations like Mayans African peoples and Oriental peoples had this in mind and wrote them in their cosmologies.

Geometry a sub branch of maths provides a precise consistent model to describe space-time. It's from Euclidian Geometry that Galileo and later Einstein developed relativity. Out of this arose Physics that predict exotic Astronomical objects namely Black holes as solutions and Dark matter /energy in gravitational lensing.

In the 1930s Paul Dirac formulated Quantum Mechanics on the Hilbert space. This opened a branch of mathematics hitherto unknown to Western science that described the working of the subatomic world. To date this theory still holds. Physical theories grounded in the maths are unfalsifiable, they suffice as theorems. One wouldn't expect Pythagoras theorem or a Ratio as  $\Pi(\pi)$  to work any different on the moon or Martian surface as they're rigid.

## **GEOMETRY OF THE UNIVERSE AND MAN**



**Fibonacci spiral, wikipedia**

**spiral galaxy, wiki**

**Human ear courtesy wikipedia**

Since the 1960's the maths we use to describe the universe was found to possess a unique flow that rhymed musically with matter and energy in the universe.

Welcome string theory a major breakthrough not only in physics but in maths currently called

### **The subject called M-theory..Bearing Galileo's cross or'sin' until when?**

M-Theory it has survived all pummeling hurled at it from Mathematics and physicists alike. Mathematically coherent, but untestable in particle detectors due to immensely high energies required. It predicts extra dimensions like in the -ADD model, Parallel universes & Super Gravity. These ultimately mean's the theory does not violate Gödel's theorem, and use's external realities to describe our physical system/world hence evading concept of incompleteness.

Currently held it is a venture held hostage to personal vanity from mainstream science itself. It's not a wonder that Galileo Galilei put forth a Heliocentric model, mathematically correct, but was tried for a 'sin' by the church then, only to be 'forgiven' after nearly 400 years. M-theory is the skeletal structure of mathematics and the hence the universe.

### **Why physics is a philosophy.**

I prefer to call physics the mathematical method of natural philosophy. Isaac Newton called it *principia mathematica naturalis*. To me simply put a philosophy is a Mechanical principle which a physical system abides to. Physics is such. with the laws of nature fixed, maths runs in tandem for it has ratios and constants, Transcendental, immutable over time hence an excellent bookkeeping frame work for nature. Stephen Hawking in the lecture—**Gödel and the end of the universe** sums this up by saying '*Physical models live rent free in a platonic heaven of ideal mathematical models* and goes further on to say '*But we are not angels who view the universe from the outside instead we and our models are both part of the universe we are describing.*'

### **Conclusion**

For an axioms merit be verifiable in nature it must have one or more supporting axiom. e.g. the statement '**I am a liar**'.

1. May be true from a positivist approach, the fellow may be describing true self as a liar
2. The fellow might be telling his/her usual lies about self and may be the opposite of a liar-true sayers.

These are methodologies that the mind uses to understand deeper the statement. Today maths and physics are faced with the same paradox. A philosophy in M-theory, that of dualities e.g. a circle of radius  $R$  is identical to that  $1/R$ , solved -it's all the same. A case called U-duality, from the Olive-montonen conjecture yet another mathematical puzzle solved.

The later days of Quantum theory saw wave theory and Particle theory merges to describe one Entity- **Quantum Mechanics**. That's nature one entity taking more than one form for example Water, same chemical substance but occurring in 3 states. This done after all maths and physics are one. it's a bitter pill to swallow but after which physics will progress exponentially as in the 20<sup>th</sup> century acceptance of **Quantum Mechanics** with innumerable discoveries to advance Man and planet. The core of reality that we inhabit is as abstract as the mathematical structure describing it. Every number is a product of a prime number. Primes are the basic mathematical building blocks of the simulation we exist in .As the mathematikoi put it- **All is number**, maths has let us humans launch space probes that transverse the solar system and land on comets. Its simplicity and elegance is what breathes life into our equations that makes us have a universe to describe.

### References

- (1)The theoretical and cognitive role of physics stud Gen (Berl) 1971
- (2) where maths comes from, Nunez
- (3) Gödel and the end of the universe, Prof Stephen hawking

