THEORY OF EVERYTHING: FIRST ULTIMATE CONCEPT IN OUR SCIENTIFIC ERA: SCOPE, IMPLICATIONS FOR RELATIVITY, QUANTUM THEORY, AND THE STANDARD MODEL, AND THEORIES OF ORIGIN OF THE UNIVERSE

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Summary

The Theory of Everything is not a kind of master concept meant to integrate relativity and quantum theory, or to formulate the Grand Unified Theory. Nor is it a concept about the merging the forces and/or particles in one unified theory. In fact, these kinds of unified concepts are not very profound and are far from being a Theory of Everything, capable of describing the ultimate nature of our universe and existence. This is because the universe is now, in the beginning of the 21st century, starting to reveal its scientific nature, but an awful lot remains to be seen, perhaps in the decades, centuries and millennia of the future. We are still at a very early phase of elucidating its fundamental nature. What we know about Einstein's relativity and quantum theory is a fraction of what is potentially possible. The nature of forces, particles, mass, gravitation is still fragmentary, while space-time and consciousness are hardly beginning to be investigated systematically. These are profoundly complex and elusive phenomena, and that is why we need to be capable of formulating the first version of quite a fairly basic Theory of Everything, the best we are able to achieve in our present time, which is what the author's second book will present in a fairly detailed treatment of the ultimate philosophical and scientific organisation of our realities of existence. There will wide scope for physicists, cosmologists and mathematicians to evolve new approaches and research projects to start expanding, as deeply as possible, our understanding of what we really are and how the universe was created.

It is inevitable that a final Theory of Everything must integrate science and philosophy into a universal scheme capable of telling us practically everything about existence, and in so doing it would indicate how the universe and its realities originated. The whole approach must be, philosophically and scientifically, unbiased and very objective, to satisfy the criteria that dictate what good science is and to avoid the fictitious kind of pitfalls that seem to be of common occurrence in modern cosmology, which have prompted various eminent thinkers to talk about the end of Physics. The absolute Ultimate Theory of Everything is not an objective attainable in our period of existence, but could only be the result of a process across time, a natural development across the ages, and will be what it is at any time, except that it is continuously evolving, due to new scientific and

philosophical data and interpretations. It is a bit awkward, in our still premature scientific culture, to look for an appellation for what is clearly a very ambitious concept, one that is too elusive at a time when so little is known about the nature of our universe. For instance, calling a concept *"The Theory of Everything"* is unreasonable, for our present times are too unprepared for such an impossible mission. If we do use it, then it has to be understood, in any case, that what we call the Theory of Everything is something that is continuously evolving and we have absolutely no idea when our Planet will be satisfied it has in fact found the Ultimate Theory of Everything. For this reason, the author has to refer to his concept of everything as *The First Theory of Everything*, because strictly speaking, we have not had a scientific Theory of Everything that is really the one the scientific community would be expecting. The author is quite aware that the Standard Model, Einstein's Laws of Relativity and Quantum Theory are still largely incomplete, and there is nothing we can do to have the comprehensive mastery of the nature of our universe, even in the next several centuries. Realities like matter, forces, particles, space, space-time, mass, gravity, micro and macro realities of the universe, the Higgs phenomenon, and particularly the existence and nature of consciousness, among other facets of our realities, will take centuries and millennia, to be fairly well explained. There is no doubt that there are complicated schemes of existence that will require an awful lot of new physics and mathematics before we are satisfied we can begin to really understand the origin and the ultimate nature of the universe.

What is the universe?

For the purpose of this section it makes no difference whether we believe the universe arose naturally or supernaturally. Under any reasonable philosophical and intellectual reasoning, it makes no sense there was no beginning of existence, for we know that our universe came into existence some 13.8 billion years ago. The enormous incomprehensibility of knowing about the scientific/metaphysical origin of the universe, has encouraged, indirectly, a tendency to argue that universes are part of an eternal succession of universes. That is a signal that there would be no leeway for cosmologists and physicists to research on the origin of our universe. That is a non-starter and serves no purpose whatsoever. At least the Theory of Everything that will be described in my coming book, although it will the first scientific one , it will show that there has to be a comprehensible scheme of the creation of the universe. With respect to Einstein's query as to whether there was a choice in the manner of the creation of the universe, the theory that the author will present will clearly show that there was none. It had to be the same concept to have the kind of universe we are, and it is very difficult to imagine that other kinds of universes are possible. For instance it is unnecessary to argue about

whether there are different kinds of supernatural powers in existence, different kinds EMF, SF, WF, gravity, universes, and in any case the author's TOE indicates that these are superfluous kinds of reflections, not worthy of attention.

Objectives of the Theory of Everything

First and foremost, the Theory of Everything would tell us what the universe is, how it originated, and what are its governing rules and laws and its main features, as far as possible. Basically, it would also tell us how and why it came to be. A TOE should be totally unbiased in its conceptualisation and approach and it should be capable of passing an authoritative opinion on practically everything about the universe. To make this point more self-explanatory, we list as many features which come to mind at this instant, about what could be the scope of a universal concept. Many of these realities of existence are not capable of explanation yet. However the TOE would be capable of beginning to understand some of our realities listed below, and progressively explain more and more of these facets of existence, as time passes, in order to explain whatever it can about our universe:

Nothingness
The Higgs phenomenon
Time
Nature of particles
Nature of energy
Nature of gravity
Space
Spacetime
Mass
Electromagnetic force
Weak Force
Quantum chromodynamics
Antigravitation
Expansion of our universe
Cosmic inflation
Inflation
Neutrinos
Dark energy
Dark matter
Matter/antimatter asymmetry
Symmetry and symmetry violations in physics
The Standard Model of Forces and Particles
Superluminal events

Black holes, centre of black holes, and singularities
Causality and the constancy of the speed of light
General Relativity
Special Relativity
Quantum Theory
Kinetic energy
Potential energy
Quantum Theory
Integration of GR and QT
Integration of relativity concepts with GT
Heisenberg Uncertainty Principle
Second Law of Thermodynamics
Entropy
Consciousness
The hard problem of consciousness
Spooky action at a distance
Locality
Non-locality
Measurement problem
Quantum decoherence
Hidden variables
Quantum entanglement
Quantum fluctuations
Vacuum energy
Vacuum fluctuations
Cosmological constant
Quantum gravity
Graviton
Zero-point energy
Origin of the universe, infinite universes, parallel universes, megaverse
Extra dimensions
Supersymmetry
Unobservable fundamental forces
Hierarchy problem
Spontaneous creation from nothing
Pentaquarks
Quantum chromodynamics.
Proton decay
String theory

M theory
Z, W bosons
Heisenberg's Uncertainty Principle
Photon
Gluon
Monopoles
Many-worlds interpretation
Spontaneous creation of infinite universes from nothing
The Copenhagen Interpretation
Big Bang concept
Creation of universes from nothing by Big Bang
Neutron stars
Pulsars

It is not likely, at our current period, to have a fully comprehensive ultimate Theory of Everything, because we need an awful lot more information about many aspects of our Standard Model, and generally about the various laws and concepts and about numerous physical realities. A TOE can even tell whether certain of these listed concepts might be simply imaginary. For instance, the Theory of Everything that will be proposed in the author's second book, will show that Supersymmetry, many worlds' interpretation, and String Theory cannot be true, although they might enable researchers of these topics to acquire useful expertise to delve into a Theory of Everything that is generally accepted as useful. The TOE could find the Higgs Phenomenon correct as far as possible, and that Extra Dimensions could exist. It will try to explain gravity, mass, but cannot substantiate the gluey nature of the Higgs boson. It will attempt to suggest what could be the nature of the neutrinos, and the nature of forces and particles. We will see that Bohr was correct to some extent about the nature of the wavefunction, and that Einstein was right that gravity could be another aspect of the electromagnetic force, so that a unified theory is something quite sensible, although gravity is not itself a field, but a physical outcome of kinetic and potential energy acting on spacetime. The Heisenberg Uncertainty is a necessary feature of our universe, and cannot exist otherwise, and can produce pairs of particle/antiparticle but not vacuum fluctuations and infinite universes, in fact it cannot be the cause for the creation of any new macrostructure of any kind.

The Theory of Everything will visibly be understood to exude philosophical interpretations of existence, to the extent that the universe is practically a

supernatural entity, where Quantum Mechanics must be underpinned by a super science that we call metaphysics. That metaphysics may show *our* physical realities of existence to be in fact, to a significant extent, metaphysical realities, particularly things like gravitation and space/time. Our current scientific knowledge is at a very early stage of comprehension of our realities, and will expand and extend in the decades, centuries and millennia to come. Therefore, the Theory of Everything that is soon going to be published will be a useful exercise that would start charting the future social, philosophical and scientific evolution of humanity. As mentioned in the author's first book *"In Search of Consciousness and the Theory of Everything of Everything"*, Kepler and Whewell were perfectly farsighted in predicting that humans have a bit of the supernatural mind that created our existence, indicating that would one day they might be capable knowing how our universe was supernaturally created.

There will also be an explanation, ultimately, of what is consciousness and it might not be something natural totally, but a combination of natural/supernatural as is very likely linked to gravitation. This should be regarded not as an exaggeration, but as something predictable, for we can judge from the research conducted so far, that humanity is far from being capable of getting anywhere to understand the universe, without bringing in the supernatural. That does not imply everything is supernatural, but it is true that everything is of supernatural origin. It will take centuries to fully elucidate the ultimate nature of spacetime, gravitation, quantum mechanics and consciousness, but it seems that these are all intimately related to supernatural realities. Ultimately then, we might start to realise we have a consciousness that could well be supernatural, indicating that the Soul Theory of various current workers could be possible. To start solving the deeply complex and mysterious nature of space, forces and particles, and of consciousness, we will need human resources that are capable of solving the incredibly intricate nature of our physical realities, touching on the frontier between the natural and the supernatural where we need complex mathematical tools, which fortunately the String mathematicians could develop as appropriate, to take over the new scientific and philosophical challenges uncovered in the search for the ultimate realities of our existence.

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