

A Discussion on the Theory of Everything

by Hamid – September 18, 2013

It is told that Archimedes, the Greek scientist and mathematician who was born about 287 BC, was possibly the first scientist that is known to have described nature with axioms (or principles) and then deduce new results from them. He thus tried to describe "everything" starting from a few axioms. Any "theory of everything" is similarly expected to be based on axioms and be able to deduce all observable phenomena from them.

The purpose of the above-mentioned foreword is by no means stating a general rule for how the structure of such a theory should be, but the aim is to remember the point that the subject under discussion has challenged the human mind for a long time and consequently, it is probable that a truth might be hidden behind it.

At the present time, "**Theory of Everything**" or "**TOE**", that is known as "*die Theorie von Allem*" or "*die Weltformel*" in German and "نظريه همه چيز" in Persian, is a well-known name familiar to everybody. Thus, preferably the same name has been also used in this article.

In the twentieth century, the endeavors of scientists for compilation and creation of such a theory, that have been carried out mainly by theoretical physicists, were briefly based on this subject that a **unifying theory** to be presented for reconciling two incompatible but important and obviously successful theories of twentieth century, one is the theory of general relativity which describes the very large-scale structure of space-time, and the other is the theory of quantum mechanics which describes the atomic and subatomic structures at very small-scales. Of course, here and there other subjects have been came into the discussion that were mostly the subject of interest of philosophers, sociologists and [psychologists](#)! For instance, this question has been raised occasionally and rightly that where is the place of human being and his actions, as an inseparable part of nature, in this unifying theory?

In order to reconcile or combine the two aforementioned theories, it has been concluded as well if a theory could prove that also gravity similar to the other three fundamental forces in nature, that is to say the weak nuclear force, the strong nuclear force and the electromagnetic force, has a quantum structure, in that case it can be remembered as the "theory of everything". In the twentieth century several theories on this basis, namely **quantum gravity**, have been developed by theoretical physicists as the candidate for "theory of everything". These theories, including different types of *String Theory*, *M-Theory* and *Loop Quantum Gravity*, in addition to having considerable ambiguities still have not been confirmed experimentally.

In order to further clarify the subject under discussion, a brief reference to the opinions of some ideologues in this regard can be useful:

- *Zoroastrianism was founded on a materialistic basis, namely on the cognition of laws of existence and nature. **Ahura Mazda** is the manifestation of existence, light and good, and **Ahriman** is the manifestation of non-existence, darkness and evil. The basic discovery of Zarathustra was in this that the universe follows its own specific laws, and according to these same laws, conflict and struggle have been spread in the arena of nature. The duty of human being in this struggle is to join to the camp of existence until the light eventually overcomes the darkness and destroys it forever. [1]*

It is necessary to remind that Zoroaster has lived, if not several millenniums, at least about several centuries before Archimedes.

- *Pierre-Simon Laplace (1749-1827) suggested that there should be a set of scientific laws that would allow us to predict everything that would happen in the universe, if only we knew the complete state of the universe at one time. He went further to assume that there were similar laws governing everything else, including human behavior. [2]*
- *In the book “the dialectics of nature”, Friedrich Engels (1820-1895) enriches his understanding of the concept of dialectics. With this work he wants to show that the same laws are discoverable in nature that have validity in the history. In other words, his attempt in this book is directed toward the adaptation of theories of natural sciences to society.*
- *If you believe that the universe is not arbitrary, but is governed by definite laws, you ultimately have to combine the partial theories into a complete unified theory that will describe everything in the universe. ... In such a scheme it is reasonable to suppose that we might progress ever closer toward the laws that govern our universe. Yet if there really is a complete unified theory, it would also presumably determine our actions. And so the theory itself would determine the outcome of our search for it! [2]*
- *The eventual goal of science is to provide a single theory that describes the whole universe. However, the approach most scientists actually follow is to separate the problem into two parts. First, there are the laws that tell us how the universe changes with time. (If we know what the universe is like at any one time, these physical laws tell us how it will look at any later time.) Second, there is the question of the initial state of the universe. Some people feel that science should be concerned with only the first part; they regard the question of the initial situation as a matter for metaphysics or religion. [2]*

It should be pointed out here that the items quoted from **Stephen Hawking** relate to a time, about the year 1988, that for the first time the book “*A Brief History of Time*” has been published. It seems in those years he has believed to some extent in the existence of "theory of everything". But it is evident that in recent times a kind of metamorphosis has been happened in the thinking manner of this famous theoretical physicist and cosmologist, because in the book “*the Grand Design*”, that he has written and published in year 2010 with the cooperation of *Leonard Melodinow*, he has in general denied the "theory of everything".

Also in the free encyclopedia **Wikipedia** it has been written recently that:

*"A **theory of everything (TOE)** or **final theory** is a theory of theoretical physics that fully explains and links together all known physical phenomena, and predicts the outcome of any experiment that could be carried out in principle."*

Here of course, it has been also emphasized the necessity to reconcile two incompatible theory of the twentieth century, namely the theory of general relativity and the theory of quantum mechanics.

The author intends with the support of more than three decades personal experiences as mechanical engineer especially in the field of machine design and manufacturing, and several years research on “theory of everything” and “quantum mechanics”, to draw from the above some tangible and practical conclusions. The outcome of these studies, which begin with axioms, was a number of articles that have been published in toequest.com. These axioms of course are the most reliable axioms which mean real mathematics. I would stress on two points here, as support for my opinions:

- ✓ Without doubt it was Galilei (1564-1642) who, in 1623, affirmed in **Assayer** (*Saggiatore*) that the language in which the book of nature was written was the "language of mathematics". [1]
- ✓ Karl Friedrich Gauss (1777-1855) created in one of his treatises the new and precise encounter with mathematics. He had been completely upset with imprecise writings and messy arguments of predecessors, and he intended his works in this respect to be non-criticisable. Gauss wrote about this to one of his friends: "I mean the word proof not in the sense of the lawyers, who set two half proofs equal to a whole one, but in the sense of a mathematician, where half proof = 0, and it is demanded for proof that every doubt becomes impossible."

"Theory of Everything", which is sometimes also called "Unifying Theory", might be written in engineering language or in theoretical physics language that in both of them, especially in engineering language, the words and their definitions are integrated (uninterpretable), but because of the emphasis of this language on math and natural sciences its role might be seems unintelligible and obscured in other branches of human knowledge. Therefore, determining the links between this theory and other branches of human knowledge, like sociology, biology, psychology, linguistics, philosophy, mythology, cosmology and so on, is the responsibility of relevant specialists. In any case, this theory must explain human being, as a natural phenomenon, and the cause of his actions both individually and collective, and in the beginning it must be able to pave the way for understanding and solving the earthly problems of this phenomenon.

*"How knowest thou what is in the zenith of the sky
If thou art not aware who is in thy house?"*

-Saadi-

Based on what was said above, "theory of everything" is not a magic box that by opening it there would be immediately a ready answer in it to every question in every field. But it should be considered as a methodology for cognition of the phenomena of the universe in its whole, including human being and his actions; a dynamic universe which is changing at every moment.

Through experience it has been proved that if with the support of some mathematical principles we could find satisfying answers for the most important scientific problems in theoretical physics, access to the foundations of the theory of everything or the methodology of cognition of natural phenomena is indeed possible, because in this process we will be obliged to achieve the highest and perhaps the most complete criterion of cognition. In the writer's opinion, even with the help of those principles it is also possible to detect the errors of some subsidiary theories or principles in theoretical physics. The errors that they themselves might be the main preventative factor in creation of "theory of everything".

Those axiomatic and undeniable principles are:

- ✓ Cognition of any phenomenon begins without doubt with measurement that itself is always along with an uncertainty. Each theory therefore should specify its criteria or standards for measurement and give a clear, understandable and useable definition for uncertainty. Otherwise, our cognition about phenomena would rather be together with conjecture and doubt which reduces the validity of that theory.
- ✓ Whereas "theory of everything" or "unifying theory" is essentially incompatible with any duality in thought, behavior and speech, that theory therefore should

openly and in a clearly manner to specify its position regarding *wave-particle duality concept* in theoretical physics!

From the subjects mentioned above and by understanding of their common points, a definition can be proposed for “theory of everything” as follows:

Definition of Theory of Everything:

Theory of everything (TOE) is a final theory in theoretical physics that introduces a unique criterion for measurement and cognition of all natural phenomena, and can fully explain and link together all phenomena and predict the outcome of any experiment that could be carried out in principle.

To formulate such a theory, the existing models about quantum mechanics and general relativity are required to be studied and understood. I mean not just read them to find their errors and to offer your solutions to remove those problems, but read to see what assumptions are being made and what are the insufficiencies and inaccuracies of these assumptions. Otherwise, no one, and I emphasize no one; if not for other reasons at least for this reason will not pay any attention to your theory. Then, you must compare your theory with current models and show how your theory not only predicts what the existing theories predict but both simplifies and makes new predictions about phenomena that these other theories cannot do. In brief, you must show what makes your theory important and what is new in it and why it is more beautiful than the existing theories and why it is surprising? A new theory cannot be a separate-woven taffeta, but necessarily it should be founded on the shoulders of existing theories and be robust enough to show that those theories might be special cases of the new theory. Lastly, after the completion of the theory, it is necessary to share it with others in order to be reviewed and analyzed by related specialists. I wish you to depart to a glorious journey safely.

To learn more about the writer’s opinions, especially for the purpose of evaluation of the content of this article, it is recommended to engineering and physics students and also the curious readers to study the following articles step by step respectively:

- [The Failure of Thomas Young’s Wave Theory](#) , [\(German Version\)](#) , [\(Persian Version\)](#)
- [Definition of Uncertainty](#) , [\(German Version\)](#) , [\(Persian Version\)](#)
- [Wave Function, Developed Gaussian Distribution](#) , [\(German Version\)](#) , [\(Persian Version\)](#)
- [Against Wave-Particle Duality Concept](#) , [\(German Version\)](#) , [\(Persian Version\)](#)
- [Exact Planck Length Unveils Quantum Gravity](#) , [\(German Version\)](#) , [\(Persian Version\)](#)
- [Diffraction of Light](#) , [\(German Version\)](#) , [\(Persian Version\)](#)

“In the struggle with darkness I do not draw sword, but I kindle light.”

-Zarathustra-

References

1. **Aristote De Bagdad**, *Dr. Mohammad Reza Fashahi* (sociologist and professor of philosophy at the University of Paris), 1995.
2. **A Brief History of Time**, *Professor Stephen Hawking* (theoretical physicist and cosmologist) 1988.

The Persian version of this article in PDF format is [available here](#).