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'UN-TANGIBLE WORLD' AND MODERN PHYSICS

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Abstract

The problem of the co-existence with the so-called 'tangible world' of a non-tangible one, inconceivable to human senses, was a point of disagreement and dispute between theology, philosophy and exact sciences. Here is discussed the evolution of this view from presocratic philosophers to modern physics. Arguments that are important for theologians in order to follow the achievements of modern Science are also given. This is particularly important for Antiretic-Objectionable Theology making an effort to confute the metaphysical views of the Christian Theology through ideas mainly based on the findings of the Exact Sciences.

Keywords: theology, modern physics, Universe, cosmology

1. Introduction

A problem that throughout the centuries was a point of disagreement and dispute between philosophers, theologians and exact sciences is the problem of the existence of an invisible to the human senses, but actual and objective, reality that co-exists with the so-called 'tangible world'. It is of interest to show that the existence of such 'un-tangible' world is not in collision with modern science, and to discuss the evolution of such idea.

We note here that a distinctive characteristic of the modern theological reality is the effort to confute the metaphysical views of the Christian Theology through the expression of ideas mainly based on the findings of Exact Sciences (Antiretic-Objectionable Theology). Today however, we know that the current scientific knowledge will be expanded, corrected, completed, and some 'truths' even annulled in the future under the pressure of new dramatic scientific discoveries. Thus, it is useful for theologians to study in detail the new Exact Sciences achievements. In fact, we suggest that they should follow the way of the Christian Church Fathers and become experts of the Exact Sciences of their epoch (like for example Saint Basil the Great [1]).

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The question of 'un-tangible world' may be a good example in support of this statement.

2. Science and the un-tangible world

The concept of modern Physics and Astrophysics dramatically differs from the Science of earlier centuries.

When after the 'Copernican revolution' began the 'divorce' between Science and Theology, Science started to be based on Aristotelian, materialistic and positivistic ideas on the important role of *common sense*, '*matter' conceivable by our senses* and, the *Newtonian space* as a space where we are like in a 'room' without any interaction with it.

The human *common sense*, the logic developed through our senses, was at that time considered often as the scientific logic. Nowadays, the modern scientific thinking diverts from the 'human common sense'. For example the Newton's principle that a body will not change its state of motion without the acting of a force is now evident since for example space ships act in accordance with it. It was opposite however, to the Aristotelian opinion based on 'common sense' that without the acting of a force, the velocity of a body will decrease, and it will come finally in the state of absolute immobility on the immobile Earth based in the centre of the Universe.

The classical physics, based on Newton's 'principles' and the Newtonian–Euclidean space, was the basement of the disagreement between Science and Theology on the existence of the non-conceivable 'un-tangible' world. The triumph of Science was the discovery of a new planet – Neptune, discovered 'on the top of a pen'. Jean Jacques Urbain Le Verrier calculated its position, and when his friend Johan Galle looked through telescope it was on the predicted position [2].

At the beginning of the 20^{th} century, it seemed that all problems of physics were solved and that on the 'crystal clear sky' of the Classical Physics there is only one small 'cloud' – the bizarre result of the Michelson-Morley's experiment, that the sum of the velocity of light and the velocity of Earth is in any direction equal to the velocity of light [3]. This result however, dramatically changed our view on space and time, showing that Newtonian Classical Physics is only the low velocity limit of a more general concept of the Nature.

As a matter of fact, the classical Newtonian Physics indicates that space could be fully described by Euclidean geometry. However, Einstein showed with the help of the General Relativity Theory, that space is not Euclidean but is described by another geometry, fundamentally different from the Euclidean one – the Riemann geometry forming the essential framework for this theory [4]. This would not be of great importance if one did not know the startling fact that images and shapes in the four dimensional Universe, can not be conceived in an adequate way by human senses. We know that our senses can only record and specify shapes that only occur in spaces up to three dimensions. Images and

shapes with more than three dimensions we can consider only with the help of theoretical models [5].

In fact, we can perceive only the projected shadows of four-dimensional shapes and figures on the three-dimensional space that is created through arbitrary intersections of the continuum and undivided universal time-space. What to say about the development of the Theory of cosmic strings, with the Universe with much more than four dimensions [6].

As mentioned by John Archibald Wheeler [7], a well-known American physicist and astronomer, "*The concepts of time and space do not represent the nature of reality, but representations of human conscience*". On the same subject, English astrophysicist Sir Fred Hoyle expresses the view that *everything exists.* "*Whatever previously existed or will exist in the future is inherent in the present. Only our conscience dissociates them and creates the feelings of historical inconsistency and time passing. Feelings though, are illusions, creations of our conscience, the way of understanding the world*." Similarly, describing the theories of Multiversum and parallel Universes, Max Tegmark [8] writes: "*One of the many implications of recent cosmological observations is that the concept of parallel Universes is no more metaphor. Space appears to be infinite in size. If so, than somewhere out there, everything that is possible becomes real, no matter how improbable it is. Beyond the range of our telescopes are other regions of space that are identical to ours. Those regions are a type of parallel Universe. Scientists can even calculate how distant these Universes are on average*."

Another old concept, overruled by the Physics of the 20th century, is that of the 'matter' as conceivable by our senses. With the discovery of spectral analysis, atomic and molecular structure and the development of the quantum physics, the opinion on the reality of the information obtained by human senses dramatically changed.

Charles Muses and A.M. Young [9] write in their book 'Consciousness and Reality': *"… a tree, a table, a cloud, a stone. All are dissolved under the influence of the 20th century science into something that consists of the same substance. That something is a medley of whirling particles that obey the laws of quanto-mechanics. This means that all the objects we can observe are simple, three-dimensional images that are formed by waves, under the influence of electromagnetic waves and nuclear processes".*

In the same way, matter, according to the theory of relativity, is not an unchangeable complex of molecules, but a condensation of an energy field. In the context of Einstein's space-time continuum, matter is not an entity on its own but a peculiarity of the field. A particle is nothing more than a moving, non-tangible whirl in space. According to modern Physics, what was perceived in earlier centuries as tangible and individualized matter, is only a false invention of our senses. In other words, we 'see' the ambient not as it is in reality, but as our senses allow us to perceive it.

What our senses are sensitive to are not the real images and shapes of the surrounding universe but their projections, their shadows. It is sufficient to see the photography of the Sun in X rays or some wavelengths insensitive for human eyes, to see the difference. It is obvious though that these projections (shadows) of the real images perceived by our senses, are not the actual world that can only be considered with the help of mathematical formulae. In other words, it should be understood that we live in a Universe that we cannot perceive through our senses and what we really see is just a 'shadow' of what really exists.

3. Theology and the un-tangible world

According to the modern Science together with the 'tangible' world, which we perceive with our senses, coexist the 'un-tangible' world of more than three dimensions. If we go toward the micro-world, we could conclude that we will also found in our three dimensions 'un-tangible' elements [10].

We could compare this view with the view of Great Father of the Christian Church Gregory of Nyssa (fourth century A.D.). His views are expressed by Elias Economou, professor at the Theological School of the University of Athens, in the book 'Theological Ecology' [11]:

"Aktistos (Uncreated) God willed and His will materialized into a tangible and a non-tangible Ktisis (Creation). One could classify the following realities:

1) *The reality of the Aktistos Trinitarian God.*
2) *The reality of the Ktisis as a result of the divine will, the materialization of God's will, which is divided in*
   a) *A non-tangible Ktisis of an invisible greatness.*
   b) *A tangible Ktisis of enormous extent, expanse, volume, variety and power.*
   c) *A mixed Ktisis of both tangible and non elements, the great and small human."*

It is interesting that such views concerning the existence of a non-tangible Creation has also been expressed by the ancient Greek philosophers. The world of senses for many of them was just an illusion, a deceptive image of the real, non-tangible world.

4. The un-tangible World of the pre-Socratic philosophers

Due to Aristotelianism, in earlier centuries the realism of the sensual world, and logics based on empiricism, often dominated. The incomprehensible by the senses, though real, world of Plato, the theory of its representation through a hylic (materialistic) tangible form, was opposite to the Aristotelian practical thinking, but without the scientific proofs to support it. Things have changed now and, apparently, Platonists could be satisfied. As already discussed, scholars know that the Universe is not tangible due to its property to be described by more than three dimensions. Images and shapes are just partial representations of true but not perceivable objects that we 'see' as 'shadows'.

The first hint concerning the relevance of truth for facts that can be conceived through human senses was made by Xenophanes who mentions:

"*No one knows and never finds out the truth about gods or everything I say, because even if one says the entire truth, they do not know it, for every issue there are only opinions."* [Extract 34, Sextus Empiricus, To Physicists VII, 49 and 110 prb Plutarch] Moreover,

"Let us consider that things resemble the truth." [Extract 35, Plutarch, Symposium Matters IX, 7, 746b]

A second hint is recorded by Heraclitus who seems to say:

"The real structure of things is usually hidden." [Extract 123, Themistius, Speeches 5, page 69D] and

"The invisible bond is stronger than the visible." [Extract 54, Hippolitus, El. IX, 9,5]

Apart from the previous abridgement, Sextus Empiricus is very persuasive that Heraclitus was completely aware of the illusive world of the human senses. He mentions:

"*Heraclite also believed that humans have two organs to achieve knowledge of truth, the sense and the 'word'. The former was considered to be deceitful, similarly to the previous physicists, the latter is accepted as the appropriate criterion.*" [Sextus Empiricus VII 126 (Heraclitus A16)] The 'word' here has its pre-Socratic meaning and it describes the result not obtained by the senses, the 'non-tangible'. The term 'word' used until now by the Christian Theology has the previous meaning, in order to define the meaning of God, considering Him through the expression 'non-tangible'.

According to Diogenes Laertius and Simplicius, the philosopher Parmenides also has such opinion concerning the illusion of the physical world as perceived by human senses. They state:

"*Parmenides believed that philosophy is two-fold; one of the patterns is consistent with the truth, while the other is only by guess. He determined as a criterion the 'word' since the senses are not accurate.*" [Diogenes Laertius IX 22 (Parmenides A1, 22)]

"Those people supposed two substances; one of the intelligible real being and another, that of the done and conceivable that they did not like to call 'being' but 'putative being'. Thus, they say that the truth is related to the real being, while for the changing being (the physical things) there is only presumption." [Simplicius Peri Uranou (De Coelum) 557, 20 (Parmenides B1)]

Empedocles, according to Sextus Empiricus, also conceived the idea of a false reality that our senses create.

"Others said that according to Empedocles, our senses are not the criteria for the truth, but only the 'right word' is. There are two kinds of the latter, the divine and the human. The divine 'word' is inexpressible (ineffable), while the human can be expressed." [Sextus Empiricus VII 122 (Empedocles B1)]

These points of view preceding Democritus, most probably constituted the starting point for Democritus and even Leucippus to formulate and justify their atomic theory. In more detail follow the views of Democritus on the 'truth' of the tangible Creation, as reported by Simplicius, Sextus Empiricus, Galenus, Aetius and Aristotle.

1. "*It is believed that there are two kinds of knowledge regarding the 'Rules', one through the senses and another through intellect. When retrieved through intellect is called pure, and is the most reliable for right judgment, while when retrieved through the senses, is called improper, without acknowledging its infallibility in the search of truth. Parts of the improper are the sight, the hearing, the smell, the taste and the touch. The other kind of knowledge is pure which is different to the improper.*" [Democritus, extract 11, Sextus Empiricus, *To physicists* VII, 138]

It is worth noticing that Democritus recognizes as improper the knowledge obtained by the human senses, which he states with their names. Another important point is that most of the pre-Socratic philosophers, including Democritus, refer to intellect as to a sixth sense, enabling to perceive the non-tangible, but existing and objective reality of the physical world. Thus, to realize the universal constitution as an objective reality, one should train the mind, avoiding that it becomes an in-objective sixth sense.

2. *'In Kratynteria, although [Democritus] promised that he would attribute to the senses the prestige of certainty, on the contrary he condemns them saying In reality we do not perceive anything certain, but only something that changes depending on the state of the body and the things that enter and exert pressure on it."* [Democritus, extract 9, Sextus Empiricus, *To physicists* VII, 136]
3. *"… and again he says: It is obvious in several ways that in re ality one does not conceive reality, does not conceive how each thing should or not be." 'Humans should learn from this rule that they are separated from reality." 'This argument also shows that in reality we know nothing about things, but for each one of us there are their recreated patterns, faith." 'However, it should be very difficult to learn how each thing should appear in reality."* [Democritus, extract 10 and 6-8, Sextus Empiricus, To physicists VII, 136]
4. *'Democritus sometimes refutes those obvious to our senses and says that none of them corresponds to reality, but only to human imagination.*" [Democritus, extract 9, Sextus Empiricus, To physicists VII, 135]
5. *"…Moreover, many healthy beings have the same things appearing different to how humans conceive them, even a human being does not always understand everything in the same way. Therefore, it is unknown which of these are actually real or fake, since the one is not more real than the other, but just as right. So, Democritus says that either nothing is real or (if it is) is invisible to us."* (Aristotle, Met. Ã5, 1009b7)
6. *"…Miserable mind, you took the certainties from us (meaning the senses), now you reject us? Our rejection is your collapse."* [Democritus, extract 125, Galenus, *About Medical Practice*, p. 113, Walzer]

Consequently, the views concerning the objective existence of a non-tangible world, are not coming only from the Christian theological mind, but this are views of different ancient civilizations as Greek, Indian, Babylonian, Egyptian and also South American. To be more precise, the existence of an 'unseen' world is discussed by the Greek pre-Socratic philosophers and for Christianity the assimilation and understanding of the ancient Greek testimonial logic was of great importance.

5. Conclusion

We can conclude that the modern Physics theoretically accepts the existence of a hyper-tangible universal and real space, as Theology also does. Michael Talbot highlights all the above in a characteristic way in his book 'Mysticism and Modern Science': "*According to New Physics, we can only dream of the real world. We dream of it mysteriously visible, omnipresent in space and constant in time. Despite the previous, we consciously approved ourselves in the false construction of illogical, loose and eternal intermissions [intersections] of its architecture, so one day one might see how false their initial frame is*". [12]

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