

Evidence for a New Cosmic Pattern

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Abstract: In a number of previous papers of our cosmological team we have dealt with the presence of golden geometry structures, as well as with the role the asymmetric numbers play in the Universe. Problems of the modern cosmology are connected with the observed accelerated expansion of the galaxies calling for the need of introducing strange entities such as dark energy. Our conjecture is that the Cosmic order is on the edge between the rational and the irrational. Integer numbers stand for the linear, deterministic, ordered part. Irrational numbers stand for the non-deterministic, chaotic part. The two constituents are interrelated and both are important. This is better expressed with the shape of regular dodecahedron imagines with the naked singularities in each of the 20 vertices.

Key-Words: Cosmology, Geocentric, Heliocentric, Dark energy, Dark flux, Kepler, Dodecahedron, Naked singularity

1 Introduction

In Herakleion, July 2008, we have presented a paper on the role of the irrational numbers, such as the phi number and the square roots of 2 and 3, in Physics[1] focusing to the traces of a cosmic plan based on the co-existence of the rational and irrational numbers in the Universe, as Plato has suggested[2]. The purpose of this paper is to highlight the traces of a Cosmic Plan based on the irrational numbers, also in the field of Cosmology, after having historically reviewed various geocentric and heliocentric approaches, in the light of modern considerations which challenge the standard model[3].

2. The ancient ideas

The cosmology discussions of ancient times have been marked by the geocentric- versus the heliocentric view quarrel. The great Aristotle has favored the geocentric model (Fig.1) over the Aristarchus heliocentric one, which was revisited by Copernicus many centuries later.

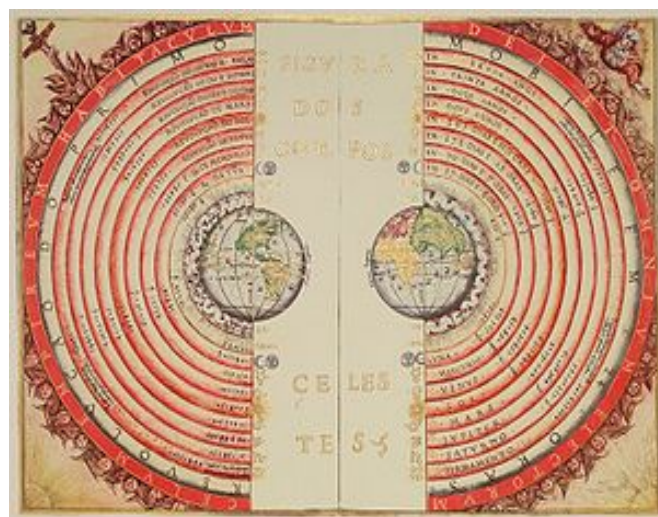


Figure 1 An ancient geocentric view

In the ancient philosophy the Geometry played a very important role in Philosophy and it was very well known the saying: Μηδείς αγεωμέτρητος εισίτω. Meaning that nobody who is ignorant of geometry enter the threshold of the philosophical schools (Pythagoras, Plato).

Among the five regular platonic solids the dodecahedron was believed to represent Cosmos, the Greek word for Universe. Cosmos means the

decorated part of the Universe, this was a classical dogma of the Ancient Greek Philosophy and not only but of the Ancient Greek Life in all its aspects! This dodecahedron consisting of 12 regular pentagons is an apotheosis of the golden section, of course.

3. The dream of Johannes Kepler

At those times when Kepler lived, the cosmology was not only a matter of physics, as it is more or less today, but also of Philosophy and Geometry. Let us not forget the Geometry! The attempt of Kepler was to introduce the principles of geometry, i.e. the regular Platonic solids in the revived heliocentric model.

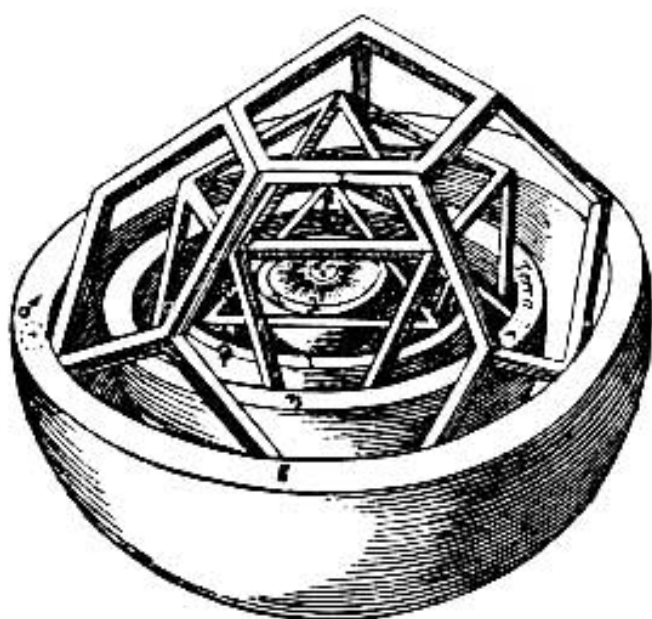


Figure 2 The regular dodecahedron in the Keplerian vision

4. The anthropic principle

"We must be prepared to take account of the fact that our location in the universe is necessarily privileged to the extent of being compatible with our existence as observers."

Note that for Carter, "location" refers to our location in time as well as space. A significant criticism of the anthropic principle as a scientific claim is that testable predictions cannot be derived from it. Brandon Carter has argued, however, that the principle can be used to predict that the period of

time biological evolution is intrinsically likely to require is very large, and on the other that the number of 'critical steps' that have occurred in the evolution of life on earth is related to the length of time life it takes to evolve.

The final anthropic principle (FAP) is defined by physicists John D. Barrow and Frank J. Tipler's 1986 book "The Anthropic Cosmological Principle" as a generalization of the anthropic principle as follows: Final anthropic principle (FAP): Intelligent information-processing must come into existence in the Universe, and, once it comes into existence, will never die out. Barrow and Tipler state that, although the Final Anthropic Principle (FAP) is a purely physical statement, the "validity of the FAP is the physical precondition for moral values to arise and so to continue to exist in the universe: no moral values of any sort can exist in a lifeless cosmology." Furthermore, the FAP seems to imply a melioristic cosmos (a tendency throughout nature toward improvement). The FAP does not imply stability of the proton: it is possible to process information using the quantum number and spin state of positronium atoms (although the positronium half-life of 100 nanoseconds would require other, more stable, particles to also exist). Barrow and Tipler make a "very tentative prediction" that the FAP appears to imply that the Universe is either flat or closed (and not open; see topology of the universe. Critics of the Final Anthropic Principle claim that its arguments violate the Copernican Principle, that it incorrectly applies the laws of probability, and that it is really a theology or metaphysics principle made to sound plausible to laypeople by using the esoteric language of physics.

We expect that in the light of the new cosmological facts the Copernican principle will not remain untouched.

5. The crisis of the standard model

The crisis of the Standard Model has been accelerated by the observation that the expansion of the galaxies was not following a constant rate with distance but it was accelerating, instead. There are other phenomena such as local high velocities of galaxy clusters which challenge the main homogeneity or isotropic principle i.e. the grounds of the standard cosmological model. All kinds of dark entities, such as: dark mass, dark energy and dark flux have been activated in order to explain the observations deviating from the standard predictions.

In order to explain the accelerating expansion of the Universe without the need of a dark energy assumption a new theory (by George Ellis, University of Cape Town co-author of Steven Hawking) assumes a privileged position for the Earth (or our planet system) located in a naked singularity or *bubble*. Outside the bubble or the bubbles the density is higher than inside[5].

The observational tools will hopefully give a better description of the modern facts and answers on the crisis of the Standard Model. These tools are:

1. The Supernova Legacy Survey, Pierre Astier from the University of Paris
2. The Joint Dark Energy Mission
3. The Planck surveyor satellite
4. The Square Kilometer Array , a gigantic radio telescope planned for 2020

6. Towards a New Approach

To our opinion the forgotten ancient spirit, combining Physics, Geometry and Philosophy, has to be taken into consideration in order to overcome the crisis. For example, according to Hippokrates Dakoglou the golden geometry provides a better approximation for the distances of the planets from our Sun, (Fig.3) than the empirical Titius-Bode formula [1].

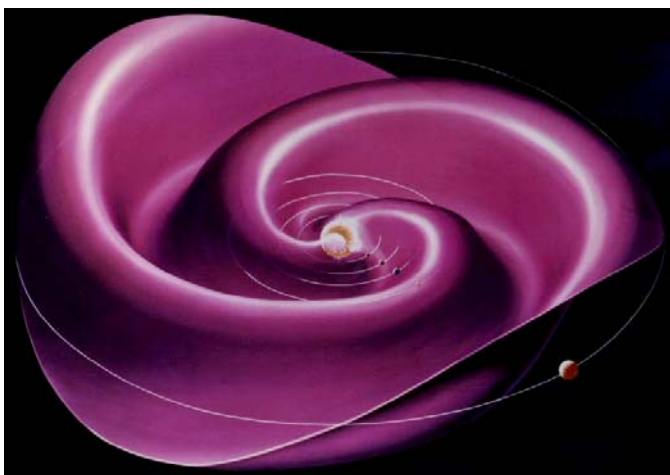


Figure 3 Our planet system

This points to the direction that the Golden Geometry should be taken into consideration when developing cosmological models. Not only the golden section number ϕ but also other irrational numbers, such as the square roots of 2 and 3 [1] do play, and even

the π and e numbers may play an important role. We could call this approach a neo-Keplerian model. Instead of applying the ideas of Kepler and of the ancient philosophy in the scale of our planet system, we try to apply it in the entire scale of the, known until today, Universe.

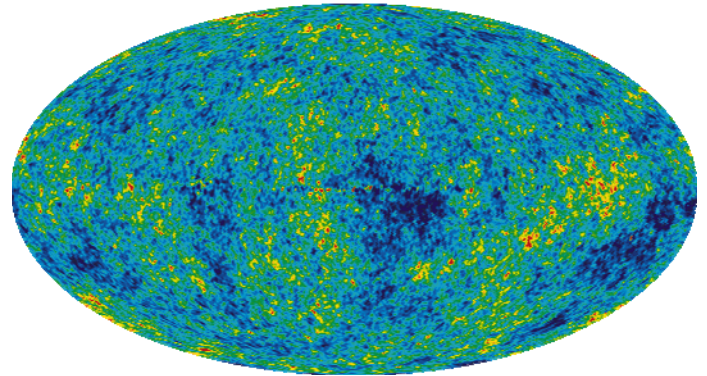


Figure 4. A modern view of the Universe

Thus, instead of viewing a rather isotropic, rather homogenous ellipsoid to be the Universe (Fig.4) , we are viewing a dodecahedron with our planet system in one of its 20 vertices. In other words there should be 20 naked singularities in the observable Universe (Fig.5). This model is geocentric in the sense that Earth (of course with the Sun and the other planets of our system do occupy a preferred place in the Universe. With this model that conserves the important features of the golden geometry, the dream of Kepler even in another scale, as well as the ancient belief giving the geometry of the regular dodecahedron to the Cosmos is fulfilled.

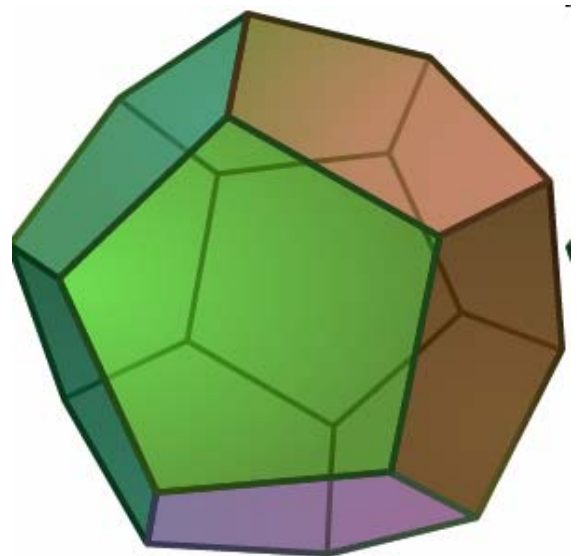


Figure 5. The basic geometry of Cosmos

8. Concluding Remarks

This paper faces the challenge of the recent crisis in cosmology in a novel way as far as the starting points are concerned.

1. Cosmology is not only Natural Sciences. It is also Philosophy.

2. Philosophy is thought in the ancient good manner that is Geometry is *a sine qua non* prerequisite of Philosophy.

3. Geometry is based on the golden section and the coexistence of rational and irrational numbers, as Plato *dixit*.

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