



A Look into the Evolution of the Scientific Inspiration of Human Mind Over the Last Five Centuries

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"Newton was not the first of the age of reason; He was the last of the magicians"

John Maynard Keynes

The modern journey of scientific minds started at the middle of the 16th century. In 1543 Nicolaus Copernicus -the renaissance astronomer- released his revolutionary book (On the Revolutions of the Celestial Spheres) stated the sun is the center of the universe, not the earth, which destroyed the classical assumptions of Aristotle and the other Greek philosophers stood for about two thousand years. It was the real birth of the age of science and the philosophy of science; unfortunately it was the year of Copernicus's death [1].

After about seventy years, Johannes Kepler- the German astronomer, mathematician, and astrologer- described mathematically the motion of planets around the sun [2]. Both men (Copernicus and Kepler) had no experimental or observational based evidence, they had nothing but their imaginative thoughts. With his telescope, Galileo Galilei - the most famous Italian scientist- introduced the first physical demonstration to the Copernican heliocentrism (Earth rotating daily and revolving around the sun), all the imagination based assumptions turned to be a seen reality. Galileo was the father of observational and modern science [3].

In 1687, Isaac Newton-the great English scientist- released his important book (Mathematical Principles of Natural Philosophy), established classical mechanics. Newton used his mathematical description of gravity to derive Kepler's laws of planetary motion to assure Galileo's observations and to eradicate any doubt about the Solar System's heliocentricity of Copernicus. He described both the motion of objects and celestial bodies by the same principles. In his Hypothesis of Light of 1675, he predicted the existence of (the ether) for the mutual transmits of forces between particles,

later he replaced it with attraction and repulsion forces between particles. In 1704, Newton published his corpuscular theory of light, newton's imagination as an alchemist could not be isolated from his contribution as a scientist. The imagination of human mind went so far to invade space and the other planets. In 1865 Jules Verne -the French novelist-wrote De la Terre à la Lune (From the Earth to the Moon) about an imaginary journey to the moon and landing on it, this dream came true after about one hundred years. The Newton's laws of motion and universal gravitation were the corner stone of the scientific viewpoint to objects and universe until they were superseded by the Einstein's theories of relativity [4].

"I often think in music. I live my daydreams in music"

Albert Einstein

Albert Einstein-the great German scientist- stated that the only constant thing in our universe is the velocity of light not the place nor the time, he imagined if he rode a stray of light from a place to another. After one hour while the change of time at the starting place is exactly one hour, the change of time at his watch would not be the same. It would be less than one hour as he moved in this extremely high velocity of light, the time slowed down! [5].

It was the theory of special relativity, it solved many problems of modern physics although it was almost impossible to have a scientific proof by the available techniques in 1905. In 1971, they measured the normal change of time comparable with the change

of time in a clock on a high speed plan, after 66 years, Einstein's imaginative and mathematical theory turned to be a fact and the imaginary time machine turned to have scientific based evidence! The mass-energy equivalence formula $E = mc^2$, which aroused from the special relativity theory had been the world's most famous equation in the history of physics [6].

In 1916, Einstein introduced his theory of general relativity of gravitation stated that the gravity was a geometric property of the space which opposed the Newton's theory of gravitation [7]. The theory of general relativity also predicted the existence of the gravitational waves and the model structure of the whole universe had changed forever. Later this theory had revolutionary astrophysical implications. Einstein's imagination was confirmed on 2016, when researchers published the first observation of gravitational waves detected, one hundred years after his prediction!

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