HOW SCIENTIFIC PROGRESS RESHAPES OUR WORLDVIEW

Gennady Shipov, Eugene Gubarev
(Russia, Moscow, Institute Physics of Vacuum, http://www.shipov-vacuum.com)

Art and Science, Religion and Science all these human activities are closely related to each other and, most likely, are different sides of the same Universal Science. The great minds of mankind have always believed that such "ephemeral" concepts as the Spirit and Soul of man are a kind of additional "sense organs" that allow a person to explore the world outside of materialism. The basis of system values, which occupy a Central place in any civilization of the world, is primarily a theoretical (logical, metaphysical) model of the surrounding space. It is most clearly displayed in works of fine art and architectural forms that are put forward and approved by civilization itself. In parallel with metaphysical ideas about space, exact Sciences put forward and improve their ideas about physical space and the flow of time.

Turning to the most ancient treatises of India-the Vedas, we see that the source of all things is Space, which is able to create a variety of material and immaterial objects from itself [1]. For rice.1 is a picture of Svyatoslav Roerich, which shows a Teacher answering a student's question about the source of the World. The Creator of everything in this picture is Emptiness, which creates itself out self and in this sense is synonymous with God.

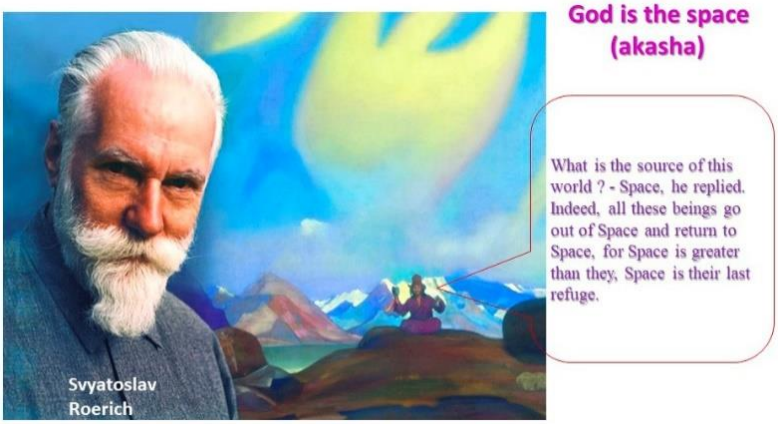


Fig. 1. Meditating Teacher in Tibet about the source of Peace

The artistic and logical model of the surrounding space and scientific knowledge about the nature of physical space are not the same thing. However, in both subjects there are common features inherent only in the civilization that put them forward. The development of metaphysical models of the surrounding world goes hand in hand with the development of fundamental knowledge about the structure of real space. The artistic and ideological model of the world and the scientific picture of the universe are equally valuable for civilization and are the basis of all its institutions.

1. One-dimensional civilization of Ancient Egypt

The great Egyptian civilization, which reigned for several millennia before our era, was logically one-dimensional (spatially one-dimensional, not counting the time dimension). This means that the basis of her metaphysical ideas about the world was a one-dimensional space-a line. The invention belonged to the Egyptian civilization

linear writing. The Egyptian temple architecture was distinguished by a linear sequence of halls, and this feature indicated the absoluteness of the infinite arrow of time. At this time, there was a change in world events, which were ordered because they were governed, according to the Egyptian priests, by a linear hierarchy of higher powers.

If we look at the map of Ancient Egypt, we will see that its territory occupied a narrow strip of fertile land on both banks of the Nile. This form of the square of the ancient state produced corresponding images of the surrounding world – for the ancient Egyptians, the world was one-dimensional.

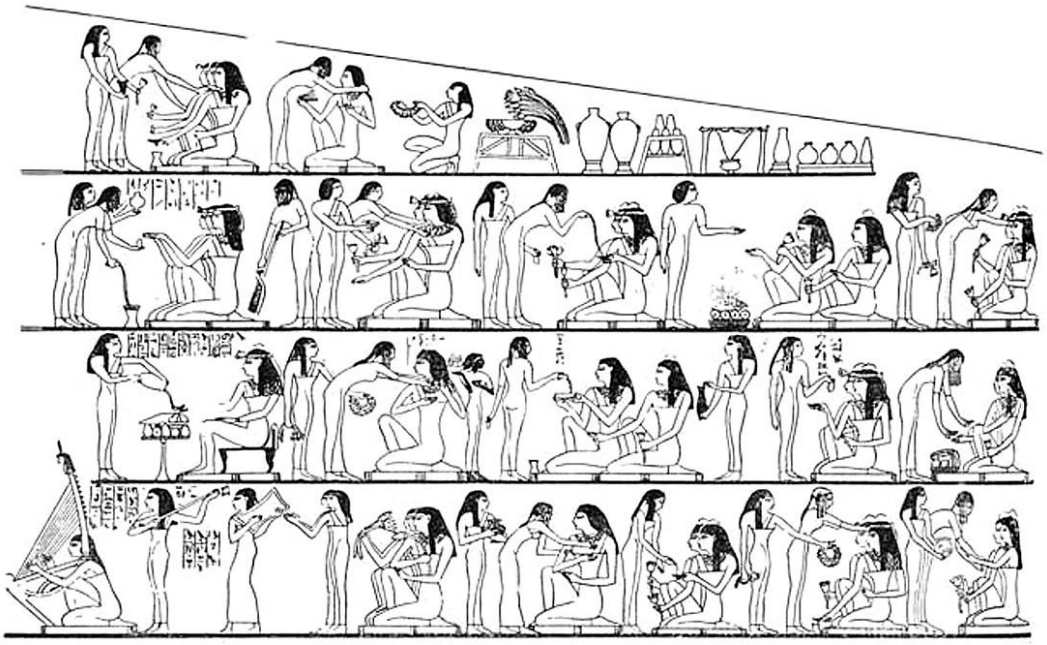


Fig.2. Feast. Painting on the tomb of Rehmir..

Structurally linear, one-dimensional model of space Fig.2. Figures are linked by actions only on the line, but not with figures from neighboring lines. This image corresponds to the principle of linear writing – one of the inventions of Ancient Egypt.

The architectural forms of Ancient Egypt were also linear, i.e. logically one-dimensional. "A typical Theban temple ... was extended along one axis. ... The location of the main parts of the temple on a single axis allowed during solemn processions with the statue to move in a straight line, from door to door, out."

The gods of Egypt, as stated in the "Book of the Dead" have a cosmic origin, which follows, for example, from the phrase: "I am Horus, I am the day of Yesterday, I am the Day of Tomorrow, I rush through space and time."

2. Two-dimensional medieval Arab civilization

Replacing the Egyptian civilization, the Arab civilization was two-dimensional (spatially two-dimensional, not counting the time dimension). The metaphysical basis of its institutions was a two-dimensional space-a plane in which there was no law of perspective.

It was the static, as it were frozen architectural forms of Arab cities that gave the impression of immutability and fundamental, which contrasted with the futility of worldly vanity. The basis for the construction of the picture of Arab artists was actually a planar projection of the surrounding reality (Fig.3). One of the highest achievements of the Arab civilization was the representation of the starry sky in the form of a two-dimensional surfaces of constant curvature. It is the image of the firmament with luminaries that adorns many domes of Islamic temples.

Fig 3. An example of early Islamic ornamental art.

The inner square of the Palace, and all the buildings and mosques are depicted in a planar (two-dimensional) manner and looks like a plan on paper. There is no hint of a third dimension.

Since 630, the only God for the Arabs is Allah. "There is no other God but Allah, and Muhammad is the messenger of Allah!".

The modern Arab civilization gave birth to a number of outstanding philosophers, astronomers and mathematicians (Banu Musa, Al-Jazar, al-Astrulabi, al-Zarkali, al-Sijizi, al-Farghani, al-Sufi, al-Biruni, Nasir al-DIN al-Tusi, etc.) who created flat scientific instruments and improved existing ones.

3. Three-dimensional Western civilization

The great Leonardo da Vinci (1452-1519) came to the world when fragments of spatial perspective were already partially used in the works of such artists of the early and middle Renaissance as Paolo Uccello (1397-1475), Masaccio (1401-1428), Mantegna (1431-1506) and S. Botticelli (1445-1510). However, among the works of artists of the early Renaissance these innovations have been random and piecemeal. They have not yet been comprehended and combined into a single system of knowledge about the three-dimensional world with its own laws about perspective, about the Central composition, etc. Standing on the shoulders of outstanding predecessors, Leonardo da Vinci was the great figure who was able to comprehend innovative but rare "exits to the third dimension", systematize them and formulate a new system of knowledge about the three-dimensional world.

Fig.4. Leonardo da Vinci's last supper fresco (1498)

Leonardo's famous work, the fresco the last supper (1498), just demon-strates a spatial image with a well-thought-out Central composition of figures and a perspective that goes to infinity. In this mural and other paintings, Leonardo introduced a revolutionary discovery at the time – the discovery of laws that model a three-dimensional vision of the world. This mural represents "all space" and "the infinite extent of action-eternity", so monumental was the artist's thought and means of expression, elevated to the law of perspective.

European scientist, thinker and statesman of the XVII-XVIII centuries, Isaac Newton was able to rethink the phenomenological (experimental) knowledge obtained by his predecessors (Galileo, Descartes, Copernicus, Hooke) and formulate the fundamental laws of nature. In Newton's mechanics, space is three-dimensional and has Euclidean geometry. It is absolutely in its very essence, regardless of anything external, it remains always the same and motionless in time.

Time is absolute, flows evenly, and is otherwise called duration.

Newton was a believer and believed that God does not depend on matter. He never fully separated science and religion, and devoted much time to the study of religious literature.

After Newton, the development of science gave rise to scientific atheism among some scientists, with the main argument being the lack of experimental proof of the existence of God. There is a famous dialogue between Napoleon Bonaparte and the famous mathematician and physicist Pierre Laplace, in which Laplace stated that in his work he does not need "the hypothesis that God exists" (Fig.5).

For Fig. 6 a painting by Joseph Wright of Derby shows an experiment with a live bird placed in a vessel to observe how the bird behaves when air is pumped out of the vessel. In the company depicted in the picture, only children show compassion for the torment of a living being, while adults are only interested in the results of the experiment.

Fig.5. Dialogue between Napoleon and Laplace

Рис.6. An Experiment on a Bird in an Air Pump by Joseph Wright of Derby, 1768

4. Four-dimensional Western civilization

The great physicist and thinker of the XX century, albert Einstein, under the influence of experimental data that appeared as a result of the development of Western civilization, for the case of relativistic particle velocities, modified the event space of classical mechanics, combining three spatial dimensions and time into one absolute 4D space-time continuum. A. Einstein formulated a special theory of relativity that operates in the special case of INERTIALS.REFERENCE SYSTEMS, that is, such systems that never change the magnitude and direction of their speed. The concept of a material point, that is, a material object of negligible size, for which the properties of its own orientation are not important.

Einstein abandoned the concept of absolute space and absolute time by Isaac Newton, attributing to each inertial reference frame its own value of time and its own magnitude of the scale of the linear dimensions of space [3]. Introduced 4D space- time is not only in mechanics, but also in electrodynamics. He abandoned the concept of ether when describing the propagation of electromagnetic waves in the void.

In 1915, Einstein made a colossal scientific breakthrough by proposing the geometric theory of gravitation (General relativity). In this theory, the gravitational field was replaced by the 4D curvature of the Riemann space.

A few years later, in 1924, albert Einstein in his philosophical article "about the ether" changed his attitude to the problem of the ether: "... we cannot do without the ether in theoretical physics, i.e., a continuum endowed with physical properties...". However, these were only arguments, that is, just words that did not cancel the position of his own special relativity, elevated to the rank of mathematical formulas, formulas that had already been tested in experiments.

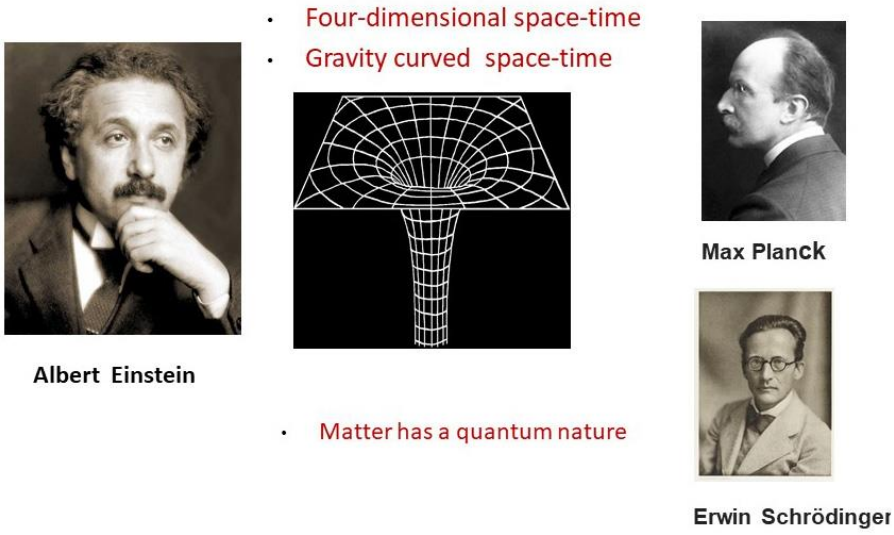


Fig.7. Scientific revolution at the beginning of the XX

Based on the works Of M. Planck and A. Einstein (Fig.7) participated in the development of the quantum theory of matter, skeptically accepting the generally accepted quantum theory of matter.

The influence of new ideas about the structure of the World could not but touch art. For Fig. 8 shows pictures that show quantization and curvature of the space.

Fig.8. Quantized and curved space in painting

Elena Ivanovna Roerich in his works and letters, developed a metaphysical understanding of the basic and advanced properties of the space.

E. I. Roerich (1879-1955)

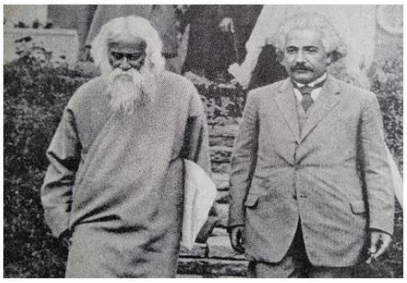
The pyramid was often seen as a symbol of the Macrocosm and, consequently, of the Microcosm, hence the division into three natures, or three worlds – the physical, astral, and fiery. ... The Top Is The Fiery World. The middle of the pyramid room symbolizes the Subtle World, and the bottom or base-the dense world... ... our feelings and thoughts take shape or create images in a Subtle World where everything is created everything is held by THOUGHT.

Fig.9. Higher Worlds in the works of The Roerich family

She writes about the existence of subtle matter, or the astral world, about its formation and influence on the physical world, or the world of manifested matter. It is important that Elena Ivanovna's teaching emphasizes the primacy of subtle or psychic energy in relation to the energy manifested (Fig.9). E. N. Roerich writes: "just as Einstein's theories do not overturn the laws of Euclid, but include them; just as the third dimension does not overturn the laws of the plane, but is infinitely wider than them, so the laws of spiritual knowledge are infinitely wider than all your [laws], but include them" ([4], p.188). E. I. Roerich also called the subtle or psychic energy "the organ of the fourth dimension" ([4], c.20), understanding it as an invisible substance in the ordinary three-dimensional world.

In 1930, two great men, Rabindranath Tagore and Albert Einstein, met in Germany Fig. 9. The main question they discussed was, does God exist? Rabindranath Tagore claimed that God exists (he called him the Universal Man), and Albert Einstein, being a spontaneous materialist by virtue of his profession, denied the existence of God. After this meeting, A. Einstein published an article "Religion and Science" [5], in which he expressed a remarkable idea. He said that if God exists, we must abandon the classical principle of causality. From the point of view of modern science, the rejection of the classical principle of causality (cause precedes effect) means that we recognize the existence of signals whose speed exceeds the speed of light, and even such signals that move from the present to the past. In 1930, science was based on the assumption that the speed of light is the limiting speed of propagation of signals, and A. Einstein himself used this assumption when creating a Special and General theory of relativity. But since then, a lot of time has passed and experiments have appeared in science that show that there are signals in Nature that are faster than the speed of light. For example, three independent astronomical observatories in Russia [6-8] recorded superluminal signals coming from stars, and these results were published in Reports of the USSR Academy of Sciences [7].

Rabindranath Tagore and Albert Einstein, met in Germany in 1930



Inderect proof of the existence of God

If God exists, we must abandon the classical principle of causality.

Physics: Violation of the classical principle of causality means the existence of superluminal velocities and the movement of time into the past

Fig.10. The meeting of two great people

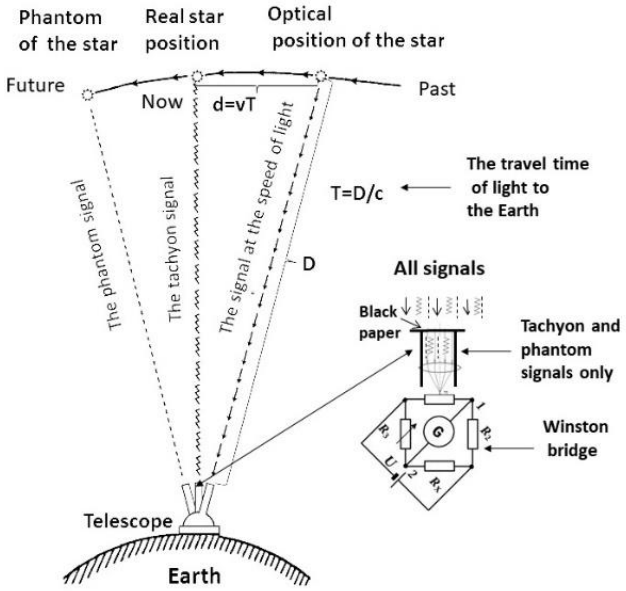


Fig. 11. Observation of superluminal and phantom signals emanating from stars

For Fig. 11 the scheme of registration of superluminal signals detected for the first time at the Pulkovo Observatory (Russia, San Petersburg) by the famous astronomer, Professor N. Kozyrev [6] is presented. Knowing the distance D to the star observed in the optical range (the optical position of the star) and knowing its speed of movement v, it is possible to determine the position of the star on the celestial sphere at the present time (the real position of the star Fig.11). N. Kozyrev pointed the telescope at the place where the star should have been located at the time of observation, while the entrance aperture of the telescope was covered with black paper opaque to light (shown at the bottom right in Fig.11). The Winston bridge was used as a recording system. As soon as the telescope's aperture was directed to the true position of the star, superluminal radiation (tachyons) passed through the black paper and caused the current to unbalance in the Winston bridge. Kozyrev's experiments were repeated in two others observatories in Russia: at the Novosibirsk Observatory under the guidance of RAS academician M. Lavrentiev [7]and at the Crimea Observatory by A. Akimov and others [8]. Measurements of the phantom (future) position of a star were completely unexpected for traditional science (Fig.11), when the signal from the star was registered in the place where the star will be located in time T in the future. This signal is not

emitted by the star itself, but by its phantom (Fig.11), which for an observer on Earth is in the future. Here we clearly observe a violation of the classical principle of causality.

Based on these experiments, it can be argued that there is indirect proof of the existence of God. This statement has a theoretical basis in the theory of Physical Vacuum, based on equations of the form Fig.12 that were received as a result of the development of the ideas of Einstein-Dirac

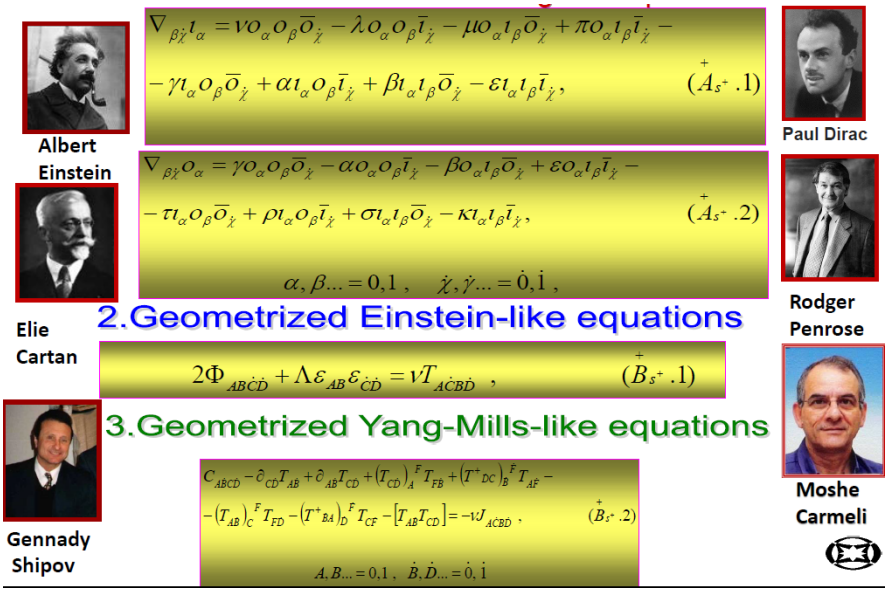


Fig. 12. Equations of Physical Vacuum

and using the works of E. Katan, R. Penrose and M. Carmel [9]. The solution of these equations describes all areas of space and the propagation speed of the signal from 0 to ∞ . In addition, as predicted in the works of Elena Roerich, the equations of Physical Vacuum describe not only the material World, but the levels of Higher Reality (Fig.13), which have a pyramidal structure, with the "Absolute Nothing" at the top of the pyramid creating everything below.

Thus, at present, a new scientific paradigm has appeared in science that can analytically describe not only the material World, but also the World of the Soul and spirit. This statement is proved experimentally by a number of psychophysical experiments, the significance of which we will have to realize in the XXI century.

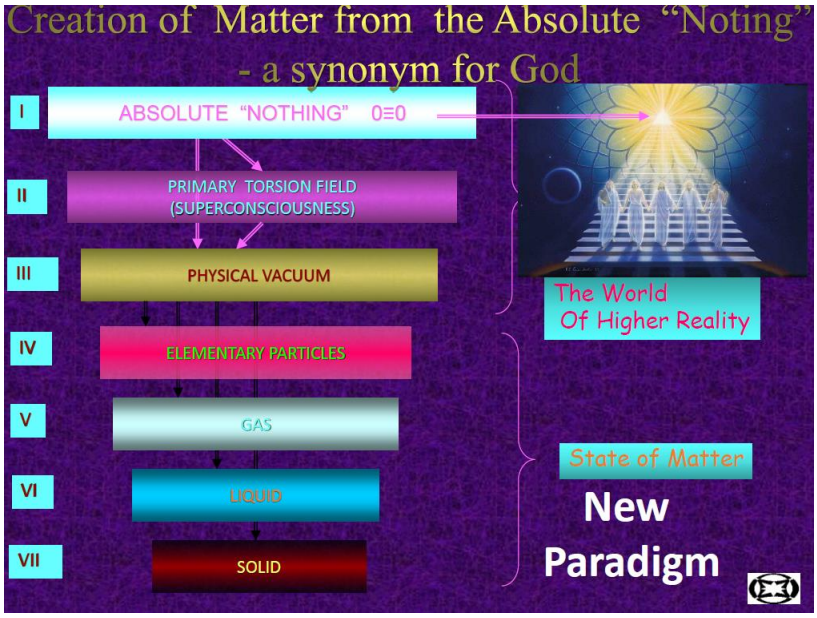


Fig. 13. Levels of Reality in the theory of Physical Vacuum

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