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The methodological role of the hypothesis of God in the scientific researches of the 17th century

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Abstract

The article analyzes the methodological role of the concept of God in the natural science worldview of leading scholars and thinkers of the 17th century through comparative qualitative research methods. As a result, the concept of God is not only allows filling the existing gaps in the results of scientific knowledge but also itself acts as a kind of research tool since it allows treating natural phenomena as manifestations of God's functions. In conclusion, the hypothesis of God finally lost the status of the necessary methodological tool, which explains the specifics of many natural phenomena.

Keywords: Natural, Science, World, View, God.

El papel metodológico de la hipótesis de Dios en las investigaciones científicas del siglo XVII

Resumen

El artículo analiza el papel metodológico del concepto de Dios en la cosmovisión de las ciencias naturales de los principales académicos y pensadores del siglo XVII a través de métodos comparativos de investigación cualitativa. Como resultado, el concepto de Dios no solo permite llenar los vacíos existentes en los resultados del conocimiento científico, sino que también actúa como una especie de herramienta de investigación, ya que permite tratar los fenómenos naturales como manifestaciones de las funciones de Dios. En conclusión, la hipótesis de Dios finalmente perdió el estado de la herramienta metodológica necesaria, lo que explica los detalles de muchos fenómenos naturales.

Palabras clave: Natural, Ciencia, Mundo, Visión, Dios.

1. INTRODUCTION

The interrelation of scientific and religious world views tends to be addressed unilaterally. Many thinkers, simplifying this problem, reduce it to the question of whether a scientist was a believer. There is a legend about Bonaparte's remark to Laplace after reading his *Celestial Mechanics*: You have written such a huge book about the system of the world, but have never mentioned its Creator; to this remark Laplace answered: "Sire, I did not need this hypothesis" (MUÑOZ, 2015: 14). The categorical statement of the modern author Khrapko, Religion is murderous for science, it would seem, is a kind of continuation of the idea of Laplace. However, reflections on Laplace's words may lead to other conclusions. Lagrange is believed to have commented on Laplace's statement: "Nevertheless, this is a good hypothesis" (MUÑOZ, 2015: 17).

Firstly, the term God's hypothesis can be introduced to the scientific circulation as a designation of the set of theoretical positions of a particular researcher, which allows revealing the role and functions of God in his natural-scientific world view. Second, the fact that Laplace did not need the hypothesis of God does not imply that other researchers did not need such a good hypothesis. Christian researcher Mumrikov rightly points out: While studying the world, an overwhelming number of the most outstanding naturalists did see God (POSCH, 2017).

Much less often researchers address the third aspect of the problem, i.e., the interrelation of religious beliefs of the scientist and the evolvement of his natural science worldview (BARKER AND GOLDSTEIN, 2001; RUBBLACK, 2018; BROOKE ET AL., 2001; LEGA, 2017; SAVREY, 2017). This aspect is considered in this article for revealing the methodological role of the hypothesis of God in the natural-science pictures of the world of Kepler, Descartes, (LEIBNIZ, 1989). A comparison of these pictures of the world revealed the similar functions of the hypothesis of God that played an essential role in the scientific work of three prominent thinkers.

2. METHODOLOGY

Kepler is rightly called one of those giants on whose shoulders, in his own words, Newton stood. He had a tense relationship with the Church, as his aunt was accused of witchcraft and burned at stake, and his mother was also accused of witchcraft, while he was expelled from Styria as a Calvinist. His account of Copernican astronomy was immediately included in the Index Librorum Prohibitorum. His religious outlook among other things inspired Kepler's scientific research: "His religious commitment and inclination to scientific knowledge were so closely intertwined that the first became a support for the second" (WESTMAN, 2001: 17).

According to many researchers, Kepler's confidence in his scientific research was supported by the idea that God chose him to reveal, comprehend, and understand the Divine plan for the creation of the world. Kepler's natural-science picture of the world acts as praise to the creator (NEYFAKH, 2005).

Kepler interpreted the Divine order in the world as being geometric: Geometry was before the world, and it was Divine. God gave the world geometric beauty, and it was His creation, and this beauty was in the hands of men. God created a geometrically perfect world, but man was also created in the image and likeness of God, so he can know this divine beauty. In fact, in Kepler's system of the world, God is the greatest mathematician-geometrician, and the task of science is to know the plans of God-geometrician in the creation of the universe. As for himself, Kepler was trying to solve the problem of world's mathematical harmony: The structure of the world can be defined mathematically since while creating the world God was guided by mathematical considerations that simplicity is a sign of truth, and mathematical simplicity is identified with harmony and beauty (BELAVAL, 1995; SUNGGINGWATI & HAVILUDDIN, 2019).

Some researchers also note the influence of Kabbalah on the formation of Copernicus' ideas about the geometric harmony of God's creation. The Kabbalah taught a descending order of creation from the perfection of God to the imperfect material world.

3. RESULT

The challenge of identifying the mathematical structure of the world Kepler started with the study of light. In 1604, he formulated the properties of light, trying to understand God's plan, who created light so that people could use it and enjoy all its colors. Kepler proceeded from the possibility of comprehending the essence of the Universe using mathematics, so he naturally came to the inevitability of the geometric relationship between the planetary spheres and the correct convex polyhedrons:

The orbit of the Earth is the measure of all other orbits. Circumscribe the dodecahedron about it, and the sphere, which in turn circumscribes it, will be the sphere of Mars. Then circumscribe a tetrahedron about the sphere of Mars, and the sphere which embraces it will be the sphere of Jupiter. Circumscribe a cube about the sphere of Jupiter and the enclosing sphere will be the sphere of Saturn. Inscribe an icosahedron into the orbit of the Earth, and the sphere inscribed will be the sphere of Venus. Inscribe an octahedron into the sphere of Venus, and you will have the sphere of Mercury inscribed into it. So you will understand the reason for the number of planets.

Sending the manuscript of his book *Mysterium Cosmographicum* to Tübingen, in which the geometric relations between planetary spheres and regular convex polyhedra were described, he wrote to his university teacher: "I wanted to become a

theologian; now you can see how the Creator is celebrated by me in astronomy also” (SOKOLOV, 1982: 15).

Since the spheres calculated in this way corresponded very roughly to the real planetary orbits, it was necessary to specify the results, in which observations over Mars played a unique role. These observations demonstrated the irregularity of its orbit, which could not be explained either in Ptolemy’s or Copernicus’ theory. It turned out that observations were not contradicted only by the notion of elliptical orbits, as opposed to the old notion of the naturalness of circular motion.

Kepler assumed that it was the elliptical orbits that corresponded to the plan of God, and he managed to reveal this plan through the laws he had discovered. Three laws of Kepler brilliantly explained the specificity of the Mars orbit and therefore were projected onto other planets of the solar system. Kepler believed that the harmony of the celestial spheres he discovered was both geometric and musical: the proportions of the natural world were also explained by music theory. It is this harmony that the Creator realized in the Universe:

Reale and Antiseri emphasize that mysticism, mathematics, astronomy, and physics are inseparably connected with Kepler and characterize Kepler as Neoplatonic thinker and mystic, for which the Sun is the most beautiful body and is the heart of the world, noting that

his belief in harmony and the mathematical order of nature is immense, and in this harmony the Sun plays a major role.

Descartes' relationship with the Church, like Kepler's, was not always right. Thus, Protestant theologians of Holland imposed a curse on Descartes' works, although Cardinal Richelieu treated them favorably enough. In Utrecht and Leiden, Cartesian ideas were forbidden, and Descartes' works were burned. In 1663, Descartes' main works were included in the Index Librorum Prohibitorum. There is even a hypothesis of Descartes being poisoned by Catholic agents for fear that his freethinking is an obstacle to Queen Cristina's conversion to Catholicism.

Many of his discoveries were stimulated by his unique view of God the Creator. The basis of Descartes' metaphysics is the concept of two substances: the materially stretched substance (*res extensa*), which forms all manifestations of nature, and the spiritual substance of thinking (*res cogitans*), which forms the intellectual abilities of man. The manifestations of both substances, as Descartes believed, are embodied in God. Here are the key ideas that form the conceptual basis of Descartes' worldview:

- The idea of infinite material Universe;
- The idea of infinite divisibility of matter;

- The belief in the absence of emptiness in the material world;
- The idea of extension as a principal attribute of matter;
- The idea of continuous motion of material bodies and their constituent particles;
- The idea of indestructibility of motion and matter;
- The idea that there is nothing in the world apart from matter, no powers apart from God, while the matter itself consists of the finest particles, whose interaction causes all natural phenomena (DICKER, 2013).

All these ideas together determine the central place of God in Descartes' view on nature: the sole fact that the entity of supreme perfection contains the idea of necessary and eternal being, it [the soul] must conclude that such a being of supreme perfection is, or exists.

The God of Descartes differs significantly from the God of the Scholasticism. His famous notion of natural light contributes not only to the identification of the essence and necessity of the innate idea of God, but also allows us to redefine its role in the natural sciences of the world: God in Descartes is deprived of many functions, and above all, he has no constant readiness to perform miracles.

Descartes' God exerted a two-fold influence on the scientific view of nature: 1) through the human scientist as a subject of scientific cognition, 2) through the process of creating the object of this worldview.

Descartes considers God as the bearer of a specific function, as the guarantor of the truth of the cognitive process: The first of the attributes of God [...] consists in being the highest truth and the source of all light, so it is obviously absurd for him to deceive us. Following the example of Kepler, Descartes gives God the characteristics of an absolute mathematician-geometrician: Mathematical truths with special obviousness should no longer be subject to suspicion. Therefore, for Descartes, mathematics and especially geometry acts as a powerful and universal method of cognition and a model for other sciences.

For Descartes the function of God the Creator is unconditional: the world was created in all its perfection, at the same time the Sun, Earth, Moon, and stars were created; Adam and Eve were created not as children, but as adults. Then, he shows the essence of his sophisticated mechanism of understanding the essence of God's plan: The nature of Adam and trees of Paradise can be better conceived, if we consider how the child gradually develops in the womb of the mother and how the plants come out of the seeds, rather than just to see them as God's creations [...], we will be able to clearly show the origin of the celestial bodies, the Earth and all other visible world as if from certain seeds.

Descartes emphasizes that this is a way of knowing, not an objective reality: and although we know that this is not so, we will explain everything better than describing the world as it is or as we believe it was created.

Descartes also highlights another essential function of God in the worldview of the natural sciences. He regards God as a guarantor of the stability and permanence of the laws of nature: from the fact that God is not subject to change and constantly acts in the same way, we can derive some rules, which I call the laws of nature, and which are the private or secondary causes of various movements. In fact, in the worldview of Descartes, God is necessary only for creating primal matter and invariable laws of nature, as afterward, nature can develop itself by these laws.

At the same time, the fundamental laws are the laws of mechanics, because, having excluded from nature all the properties, Descartes explains the change of direction of movement only by the push of external bodies. Even animals and the human body are presented by Descartes as self-propelled machines, such as clocks made up of wheels and springs ... so that in these mechanisms no soul can be found, neither a vegetable nor sentient and no other beginning of movement and life except for blood and spirits.

Since in the absence of God, the natural sciences world view would be deprived of the most important foundations, Descartes must

prove God's existence. Such proofs (there are four of them in Descartes) are usually included in the context of his philosophy, but to a certain extent, they can be included in the substantiation of his scientific ideas (even more so, because one of the proofs is almost purely mathematical). As the idea of God is the idea of a perfect being, God cannot be deprived of existence. Otherwise, he would lack perfection. Descartes relies on a geometric analogy: just as a triangle cannot be given without the sum of its angles, necessarily equal to the sum of its two right angles, the idea of God cannot be given without its obligatory existence.

Thus, God in the natural-scientific world view of Descartes has to come out of the shadows very seldom, only in cases of insurmountable difficulties. Moreover, sometimes Descartes expresses himself in the vein of Spinoza, identifying God with nature: By nature, considered in general, I mean nothing less than God Himself, or the order and location established by God in the created things. God not only creates nature but also is dissolved in it. When theologian Moore asked where God was in this picture of the world, Descartes had to answer: Nowhere Pascal noted with indignation that Descartes would have liked to do without God, but could not resist giving him a click on the nose, forcing him to move the world. After that, he had no more works with God.

4. CONCLUSION

A comparative analysis of the pictures of the natural world developed by Descartes, Kepler, allows us to conclude that the integrity and consistency of natural science pictures of the world by three outstanding natural scientists were ensured by the fact that they were not wholly natural sciences: the concept of God played an essential role in these theoretical constructions. It is this concept of God that is methodologically very important, especially in situations where science does not yet have adequate means of solving its actual problems. The concept helps to fill in the missing forces, sources, and causes. It is not without reason that in various naturalists, God performs similar functions, although not wholly coinciding in content. In most cases, the following functions can be distinguished: the function of creating the world, the function of its structural arrangement, the function of harmonizing the Universe, the function of power and omnipotence, the function of providing the prerequisites for the cognitive process, the function of ensuring the immutability of the laws of nature, the function of the root cause of movement and the conservation of momentum, etc.

Intensive development of physics, chemistry, biology, astronomy, geology, and other natural sciences in the 18th and 19th centuries led to a new revolution in natural science. An electromagnetic picture of nature was formed, natural causes explained the laws of which the global scientific revolution of the late 19th -

early 20th centuries led to the formation of a quantum-relativistic picture of the world, to the formation of modern cosmology. The Hypothesis of God finally lost the status of the necessary methodological tool, which explains the specifics of many natural phenomena. However, this does not mean that the hypothesis of God can be ousted from the sphere of human culture.

In the culture of almost all countries and peoples, God was, is and will remain the object of worship, devotion, discussion, admiration, etc. In the system of culture, but the functions of God also remain diverse.

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