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The Reflection of Philosophy and Physics in the Interpretation of the Holy Quran

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Abstract

The search to find the first matter that is at the beginning of creation is an ancient idea in philosophy. This idea was followed until the 18th century, Western philosophers tried to reduce substances. In the 19th century, the study of fundamental particles and forces that constitute matter and radiation is considered the main goal of physics, and a list of fundamental particles is provided. In astrophysics, the search for the first material of the creation of the universe is followed. In the Holy Quran, this question is answered with Dukhan as the first matter, and there are also narrations about this. The commentators are also influenced by narrative source books, mystical and philosophical reflections and the achievements of astronomical physics to express their opinions about what Dukhan is. This essay, therefore, aims to investigate the reflection of philosophy and physics in Quranic interpretations.

Keywords: *First Matter; Big Bang; Plasma, Dukhan; Fundamental Particles*

Introduction

In the first section I discussed the history of research on first matter in philosophy, quantum physics and astronomy. The next section sets out the commentators' interpretations of Dukhan as the first matter. I will try to show that some interpretations of Dukhan are comparable to philosophical and physical theories.

The problems of this investigation are thus as follows:

1.Did the commentators use scientific theories for interpretation?

2 If so, can this also be used to discuss the topic of the article?

3. what influence did philosophical and physical theories have on the interpretation of the first matter?

This study uses the library method to collect information and comparative analysis to compare it.

Background

The first matter in philosophy

The search for the beginning of creation is one of mankind's oldest considerations. The idea was developed in ancient philosophy. According to the account in the book "Enuma Elish", the Babylonians believed that the beginning of the creation of the world consisted of water (Cavendish, 1377, Vol. 1: 129). In India, according to the poems of the Rig Veda, water existed before the creation of heaven and earth (Shaygan, 1362, vol. 1: 80), but in Jainism the smallest unit of matter is a particle. Particles are eternal and create different essences of the universe (Shaygan, 1362, vol. 1: 203). Similarly, for "Theravada", the particle is the first matter of creation. (Ibid: 361).

In ancient Greece, Thales claimed that water is the first matter (Aristotle, 1377: 12). Anaximander introduces the first matter as an unlimited, indefinite and eternal matter. Anaximenes considers air to be the first matter (Ibid: 13). With regard to the entire universe, Xenophanes says that the One is God (Ibid: 22). The Pythagoreans regard number as the first matter or origin (Ibid: 17). Leucippus and his student Democritus introduce particles that cannot be seen or dissected (Kenny: 2004 & Pullman: 1998).

Heraclitus sets fire as the first matter and foundation (Aristotle, 1377: 13), after him Empedocles introduces four elements, including earth, air, fire and water as primary matter (Ibid: 18). Aristotle introduces primary matter as an eternal substance with pure potential (Aristotle, 1358, vol. 1: 277). Mutahhari critically evaluates Aristotle's theory, including:

According to the theory of unified combination, it is impossible to consider primordial matter as pure potential in any way (Tababai 1332, Mutahhari footnote, vol. 4: 175).

The union of matter and form requires the joint existence of both components. A thing has matter by virtue of its potentialities and has a form by virtue of its actualities (ibid.: 215). In other words, according to the unified composition of matter and form, pure form and pure matter are impossible. Mutahhari's criticism is quite correct. But it seems that this theory can be defended if primary matter is modified as a substance with minimal actuality and not as pure potentiality.

Aristotle's distinction between primary and secondary substance has prompted later scholars to discuss Aristotle’s framework containing the origin of substance (Akpan & Odohoedi, 2016:263). Among the Western philosophers, there were some who believed in monism, such as Spinoza from the 17th century. He introduced God as the only possible substance. He thus opposed Descartes, who introduced the three types of substances: God, spirit and matter. He declared that: God, nature and substance are three different names for one and the same reality. It is the totality of reality and has an infinite number of properties, although we only know two of them. These are spirit and matter, and it is through these two properties that we know it. All things are modifications of this substance and are parts of it (Stumpf & Fieser, 2003: p. 82). Leibniz introduced monads as the “mental atoms” and the incorporeal building blocks of the universe (Russell, 2008). Monads are things that are infinite in number and occupy no space; they are immaterial and dimensionless points. The search for the first matter in physics began in the 19th century with the development of laboratory equipment and detectors.

First matter in physics

The study of fundamental particles was started from the 19th century in classical physics and then continued in quantum physics, and the search for the beginning of the origin of the universe was also pursued in astrophysics, and the results of each of these researches are mentioned here.

In 1803, John Dalton, an English physicist and chemist, proposed the atomic theory based on the two hypotheses of the law of conservation of mass and the law of definite proportions, and in 1808 he published a more detailed account in the first part of his book (Dalton, 1808).

Until 1897, atoms were thought to be the smallest possible subdivision of matter. Until Thomson discovered the electron with his work on cathode rays (Thomson, 1897).

Rutherford predicted that the atomic nucleus contained positively charged particles, which he called protons (Heilbron, 2003). Further experiments by Rutherford showed that the mass of the nuclei of most atoms is greater than that of the protons they contain. He hypothesised that this extra mass of the nucleus was related to neutrally charged particles, which he called neutrons. Finally, James Chadwick's experiments in 1932 proved the existence of neutrons in the atomic nucleus. He showed that the physical properties of radiation could be explained by invoking a neutral particle of one atomic mass unit: the neutron (and modern nuclear physics) was born (Chadwick 1932) and the classical era of fundamental particles ended. The challenge to wave-particle duality led to the physical concept of the particle undergoing significant development over time. (Harlander et al. 2023:4) According to this view, particles can behave like waves. Fundamental particles are divided into two types: matter particles (antimatter) and energy particles. In physics, the unified field theory (UFT) was proposed by Einstein to unify the fundamental forces. In 1963, Sheldon Glashow proposed that the weak nuclear force, electricity and magnetism could emerge from a partially unified electroweak theory. in 1964, two physicists independently proposed the existence of the subatomic particles known as quarks. Today it is assumed that protons and quarks are made up of more elementary units. in 1967, Abdus Salam and Steven Weinberg independently revised Glashow's theory by creating the masses for the W-particle and the Z-particle through spontaneous symmetry breaking with the Higgs mechanism. Their theory was first substantiated experimentally by the discovery of weak neutral currents. in 1983, the Z and W bosons were produced for the first time by Carlo Rubbia's team at CERN. Glashow, Salam and Weinberg were awarded the Nobel Prize in Physics in 1979 for their findings. Abdus Salam emphasized in his speech at the Nobel Prize ceremony:

> From time immemorial, man has desired to comprehend the complexity of nature in terms of as few elementary concepts as possible. Among his quests—in Feynman's words —has been the one for "wheels within wheels" —the task of natural philosophy being to discover the innermost wheels if any such exist. A second quest has concerned itself with the fundamental forces which make the wheels go round and enmesh with one another (Abdus Salam 1980: 526).

But such an idea (the discovery of the innermost wheels, if there are any) has not yet been realized. The list of fundamental particles of the Standard Model includes 12 fermionic particles, including "leptons" and "quarks", as well as 12 fermionic antiparticles and bosons or the force-carrying particles (Morii et al., 2004). These results show that although efforts are being made to reduce the number of fundamental particles, this goal has not been achieved and that the diversity of these particles is large. Furthermore, these results are not definitive and more fundamental particles may be discovered in the future.

First matter in astronomical physics

The idea of finding the first matter is also pursued in astrophysics. The Russian physicist Friedman formulated a result that Einstein himself doubted by solving Einstein's field equations. Friedman's theory is based on Einstein's general theory of relativity and proves the expansion of space in homogeneous and isotropic models of the universe. This theory was measurable. in 1929, Edwin Hubble discovered that the waves received from the stars decrease in frequency (redshift). According to Doppler's law, the researchers concluded that the stars were moving away from the planets and the universe was expanding. Edwin Hubble's observations indicate that very distant galaxies and galaxy clusters are

moving away from us, and the further away they are, the faster they move (Hubble's law). If the galaxies are moving away from each other in their current state, it is logical to say that they were once very close to each other.It is discovered that the speed at which astronomical objects move apart is proportional to their distance from each other. This indicates a change that must have developed from a denser state as a result of the Big Bang. According to this hypothesis, the universe was born as a very hot, dense, single point in space and began to expand at very high speed, scattering infinitely dense material in different directions in a fraction of a second. The discoveries of the 1950s, 1960s and 1970s have increasingly confirmed the Big Bang model, and more galaxies have been studied and redshifts measured. Astronomers' calculations show that billions of years ago the universe was concentrated in a small space. At that time, all matter was condensed into a very small sphere with infinite density and great heat, called a singularity. The four main forces, i.e. gravity, electromagnetism and the strong and weak nuclear forces, were combined into a single force, and after the great explosion their fragments were scattered around at a very high speed. A crucial discovery was the observation of low levels of microwaves throughout space. Astronomers believe that these microwaves are the remnants of extremely high-temperature radiation. The discovery of this cosmic microwave background in 1964 by Arno Penzias and Robert Wilson (Penzias et al., 1965) was accepted as important evidence for the Big Bang theory and against the competing steady state theory (Dick et al., 1965). Then astrophysicists added many theories and observations to this model. Since interstellar space consists of plasma and dust, the hypothesis of the formation of stars from dense plasma was proposed (Vasilyev, 1359: 39 and 16). According to one hypothesis, the only source of energy for the stars is the conversion of hydrogen into helium (Harvit, 2009: 38).

The Current Study

The first matter in interpretations

The Holy Qur'an has introduced the heavens into the process of expansion (Q 51:47). And it introduces the beginning of the creation of heaven from *Dukhan*:

ثُمَّ اسْتَوَىٰ إِلَى السَّمَاءِ وَهِيَ دُخَانٌ فَقَالَ لَهَا وَلِلْأَرْضِ ائْتِيَا طَوْعًا أَوْ كَرْهًا قَالَتَا أَتَيْنَا طَائِعِينَ" :
Then He turned to the heaven, and it was Dukhan, and He said to it and to the earth, 'Come, willingly or unwillingly!' They said, 'We come obediently" (Q 41:11).

Over the centuries, commentators have expressed different interpretations of the explanation of *Dukhan*, Dukhan, which will be discussed in this section.

A. Steam

Qumi, the commentator from the third century AH, narrates a hadith from Imam Sadiq (a.s) who said:

> Before the creation of the sky, there was no creation except water and air. The Lord wanted to create the earth and the sky, so He commanded the wind to blow on the water and a wave arose, which turned into foam and created the earth. Then He commanded the wind to blow over the water and fireless roses of smoke arose, and from that smoke He created the heavens (Qumi, 1404, vol. 2: 70).

In his commentary, Qumi refers to the above account and considers the creation of air before water (ibid., vol. 1: 322). Tabarsi (commentator from the 6th century) transmits a hadith of the Holy Prophet (peace be upon him) regarding the interpretation of dukhan as water vapor (Tabarsi, 1373, vol. 9: 8). Based on these two traditions, according to the interpretation of some commentators, the water vapor is dukhan and the first matter of the creation of the heavens (Al-Baghawi, 1420, vol. 4: 126; Kashefi, 1369: 1069 and Shubbar, 1407, vol 5:368)

B. Fire's smoke

Some other commentators in the sixth century added a second possibility in the nature of Dukhan. In this second possibility, the sky was created from the smoke of fire (Ibn Jawzi, 1422, vol. 4: 47 and Ibn ‘Atiyah, 1422, vol. 5: 7). This possible meaning is favored in the 13th century commentary by Shukani (Shukani, 1414, vol. 4: 582). According to Heraclitus, this meaning is:

> Some other commentators in the sixth century added a second possibility in the nature of *Dukhan*. In the second possibility, the sky was created from fire's smoke (Ibn Jawzi, 1422, vol. 4: 47 and Ibn ‘Atiyah, 1422, vol. 5: 7). This possible meaning is favored in the commentary by Shukani in the 13th century (Shukani, 1414, Vol. 4: 582). This interpretation corresponds to the opinion of Heraclitus.

C. The subtle, dark, all-pervasive and obscure matter

Meybudi (sixth century), Baydawi (seventh century) and Alusi (in the 13th century) interpret Dukhan as a subtle, dark, all-encompassing thing (Meybudi, 1371, vol. 8: 511; Baydawi, 1418, vol. 5: 68 and Alusi, 1415, vol. 6: 209).

Allameh Tabatabai, one of the contemporary commentators, explains that dukhan is a vague and unspecific matter (Tabatabai, 1417, vol. 17: 367 and 365). This interpretation is rooted in his philosophy, which is influenced by the philosophy of Aristotle.

D. current unity in beings

Ibn ‘Arabi presents the first matter as the simple reality or “the merciful soul” (Nafs Rahmani), which assumes every form, like the building plaster, and which, according to the philosophers, is the first being in the world that has the possibility of assuming forms (Ibn ‘Arabi, n.d, vol. 1: 119). The interpretation of Sadr al-Din (Mulla Sadra) is similar to that of Ibn Arabi. According to Mulla Sadra's hermeneutic method, the meaning of the first matter is the same as the simple reality in Islamic philosophy or the "merciful soul" in Islamic mysticism (Sadr al-Din, 1368, vol. 5: 208). He comments on Thales, Anaximenes, Pythagoras, Plato and Aristotle as follows:

> 'These sages were of one mind, and we should not be satisfied with the appearance of their words. The interpretation of their words is the divine scientific circumambulation of beings (ibid.: 207).

According to this view, there is a single truth (simple reality) in the whole universe, like the breath that flows in the words. This view is similar to that of Anaximander.

E. Ultra-compressed and ionized gases (plasma)

Under the influence of developments in astrophysics, the interpretations of some commentators changed. According to the results of astronomical physics, Dukhan is interpreted in some interpretations of the 14th lunar century as gas, which is the main component of the creation of the spheres and the sky (Hosseini Hamedani, 1404, vol. 6: 366 and Qorashi, 1377, vol. 9. 412 and Makarem Shirazi, 1374, H 20: 228). Sayyid Qutb and Qasimi consider sodium gas with dust as an example of dukhan (Sayyid Qutb, 1412, vol. 5: 3114 and Qasimi, 1418, vol. 8: 326).

Makarem Shirazi in his interpretation of the verse "وَ كانَ عَرْشُهُ عَلَى الْماء" or It is He who created the heavens and the earth in six days a --His dominion (throne) extends over the .(Q 11:7) writes: sometimes every liquid thing is called water ("ماء"), like liquid metals and the like. From the

interpretation of these two words, we conclude that at the beginning of creation, the universe consisted of molten matter (or extremely compressed gases that took the form of molten and liquid matter):

> Then violent movements and great explosions took place in this water-like molten mass, and parts of its surface were thrown out one after another, this union and adhesion tending to separation, and the planets and systems formed one after another. Therefore, the universe and the foundation of the throne of God's power initially rested on this great water-like matter (Makarem Shirazi, 1374, vol. 9: 26).

Conclusion

The search for first matter is one of the most important considerations of ancient philosophers, and it was introduced from one element such as water or fire and air to several elements. Aristotle proposed the first matter as pure potentiality. Aristotle's theory was accepted by some great Muslim philosophers such as Ibn Sina and Mulla Sadra. A primary substance with pure potentiality and no actuality is intellectually impossible, but with minimal actuality it may be possible. The idea of primary substance for creation was prevalent until the 18th century, Western philosophers tried to reduce primary substance, e.g.Spinoza introduced God and Leibniz monads as the substance of things.

From the 19th century onwards, research into subatomic particles began in physics, and eventually the list of fundamental particles of the Standard Model was introduced. This list shows that the idea of unifying the fundamental forces (unified field theory) has not yet been realized. In astrophysics, the Big Bang hypothesis is the most widely accepted theory, which is also supported by experimental evidence. This theory corresponds to the theory of primordial matter in philosophy and the Dukhan in the Holy Quran. The commentators express their opinion on the meaning of Dukhan based on philosophical considerations and the achievements of physics and astronomy. In this study, a number of commentators' opinions about dukhan, including water vapor, fire smoke, undefined matter, primary matter (hūlē, hȳlē), the simple truth, and plasma, have been proposed. In the comparative evaluation of these opinions, it can be concluded that these interpretations, especially the last one, have been harmonized with the prevailing scientific and philosophical knowledge in the era of commentators.

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