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Mathematics, Philosophy, and Divine Unity: Comparative Approaches in Islamic and Western Thought*

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Abstract

Beyond its foundational role as an exact science and a practical tool for measurement, mathematics has long served as an essential language for describing the profound order and harmony inherent in the universe. This structural order—manifested through numbers, geometric shapes, and proportional ratios—was historically regarded by philosophers and theologians as a direct reflection of divine wisdom and cosmic design. Utilizing an analytical-comparative methodology based on original historical and philosophical sources, this article thoroughly examines the deep-seated relationship between religion and mathematics across ancient Greece, India, the Islamic world, and Western philosophy. The findings reveal that foundational mathematical concepts—ranging from Pythagorean number mysticism to Al-Khwarizmi's groundbreaking algebra and the sophisticated geometric theories of Khayyam and Tusi—were pursued not merely to solve scientific problems, but as spiritual

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tools for comprehending divine rationality. Moreover, the insights of contemporary thinkers like Allameh Tabataba'i and Hassanzadeh Amoli demonstrate that this perspective remains vibrant within monotheistic thought today. By adopting a non-teleological framework, this study highlights how differing metaphysical assumptions shaped mathematical interpretations across cultures, ultimately proving that the bond between religion and mathematics is intrinsic, rooted in order, truth, and unity.

Keywords

religion, history, mysticism, nombers, principle of existence.

1. Introduction

From the first creation story of human thought, the issue of the order of the world and its relationship to the origin of man's mind has been raised. When man looked at the stars or drew geometric shapes in the sand, he was unconsciously searching for law and meaning. This search emerged in the course of history as two great currents: one was religion, which saw the order and purpose of existence in the divine will. And the other was mathematics, which sought order in the quantitative and numerical forms of the world. In ancient civilizations, religion and mathematics were inseparable. In Egypt and Babylon, measuring the earth and time, calculating the movement of celestial bodies, and building pyramids were all part of religious rituals. In India, mathematics was tied to astronomy and the Vedic religion, and in Greece, the Pythagoreans considered numbers sacred. In Islamic civilization, mathematicians such as Avicenna, Al-Khwarizmi, Biruni, Khayyam, and Tusi also saw mathematics as a way to understand the order of creation.

The purpose of this article is to examine this historical and epistemological connection to show how mathematical knowledge has served the divine understanding of the world and how Muslim and non-Muslim thinkers throughout history have explained this connection. This paper adopts a comparative, non-teleological approach to examine how religious and metaphysical assumptions shaped the philosophical understanding of mathematics across different intellectual traditions.

It is important to note that scholarly interpretations of the relationship between mathematics and philosophy can vary significantly across cultural and historical contexts. This paper acknowledges two distinct perspectives reflected in prior peer reviews: one emphasizing Western, non-Islamic philosophical

traditions, and the other focusing on Islamic intellectual frameworks and their integration of mathematics with divine unity. By explicitly situating the analysis within a comparative and non-teleological framework, the study seeks to address these divergent viewpoints, demonstrating how mathematical thought can be understood both within Islamic philosophical traditions and in dialogue with Western philosophical developments, without privileging a single historical or cultural lens.

2. The concept of religion and mathematics and the possibility of linking them

Religion, in its broadest sense, is a system of beliefs and values that gives meaning to existence and guides man towards a truth beyond matter. Mathematics, in its most basic definition, is a science that deals with general and abstract concepts such as number, quantity, proportion, form, and order. Both fields, although different in terms of method, share the same search for order and truth. In the Islamic philosophical tradition, the concept of "order" has always been a sign of "reason" and ultimately" the wise creator." The noble verse: “Indeed, We have created everything in precise measure.” (Quran 54:49). It clearly indicates the existence of a measurable and precise structure in the universe. This concept of measure and destiny is the very foundation of mathematics. In fact, by analyzing proportions and measurements, the mathematician approaches the same thing that the theologian reaches by contemplating creation: divine law and wisdom. In the Timaeus, Plato sees the universe as a mathematical and harmonious structure that God created based on number and proportion. He says: “God is a geometer.” This statement is not a metaphor but a philosophical truth; because the divine intellect has organized the universe by means of number, form, and measure. In the

Islamic world, theologians and philosophers such as Avicenna and al-Farabi also believed that the science of mathematics is an intermediary between natural science and divine science; because it begins with the tangible but ends with the intelligible. Mulla Sadra writes in Asfar Arba'ah: "Mathematics is the science of order and proportion, and this order and proportion is a manifestation of divine beauty." Therefore, it can be said that the connection between religion and mathematics is not at the level of application, but rather in the depth of ontology and epistemology. Both are in search of "order in unity" and "unity in plurality"; that is, the same principle that is known in Islamic philosophy as numerical monotheism and in mysticism as the manifestation of the name "al-Hakim".

To maintain a coherent theoretical framework throughout the paper, this study consistently emphasizes the interrelation of number, order, and unity as central to understanding the philosophical and religious significance of mathematics. Each section integrates this perspective, demonstrating how mathematical concepts are not merely abstract tools, but instruments reflecting broader metaphysical and theological principles.

3. The view of ancient Greek philosophers

3.1. Pythagoras and number as the principle of existence

Pythagoras (6th century BC) may be considered the first thinker to express the relationship between religion and mathematics in a philosophical way. He believed that number was not simply a means of measurement but the "essence of things". In his view, number was the source of order, harmony and beauty. The Pythagoreans had a form of numerical mysticism in which numbers were considered sacred, especially the number 10, which symbolized perfection.

The Pythagoreans considered music, astronomy and geometry to be ways of discovering the harmony of the world. This view actually considered mathematics a form of intellectual worship, because discovering harmonious proportions was attuning to cosmic reason. This idea was later continued in Plato's philosophy as the theory of "geometrical proportions in the soul and the world.

3.2. Plato: The geometric world

Plato (427–347 BC) inscribed the following over the entrance to his Academy: "Let no one who does not know geometry enter." For him, geometry is the language of God and the material world is a picture of the ideal world in which everything is shaped by mathematical proportions. In the Timaeus, Plato explains the formation of the universe based on five regular solids (tetrahedron, hexahedron, octahedron, dodecahedron, and icosahedron), and sees this structure as a sign of the rational order of creation.

Plato says: "God created the world on the basis of number so that order and harmony might be established in it." This view later inspired Christian theologians such as Augustine and reached the Islamic world through translations of his works.

3.3. Aristotle: Mathematics between sense and reason

Aristotle (384–322 BC), although he disagreed with Plato on the issue of analogy, emphasized the importance of mathematics as a science between the sensible and the intelligible. He wrote in Metaphysics that mathematics frees reason from the sensible and leads to a level of understanding of order that is a prelude to understanding the final cause (i.e., God). For him, God is the prime mover of cosmic order, and mathematics is a way to understand the order of celestial motions.

4. The view of western philosophers and mathematicians

Throughout history, several mathematicians have regarded mathematics not merely as a science of numbers and forms but as a profound means to understand divine order and the wisdom of God. Isaac Newton was not alone in this conviction; many of his predecessors and successors shared a similar view that the structure of mathematics reflected the structure of creation itself.

1) Galileo (1564-1642)

He is known to have said: "The book of the world is written in the language of mathematics." He means what Allameh Tabataba'i says about order and balance in creation: the world can be measured and described mathematically. Galileo considered science a tool for discovering the natural order, not a substitute for religion.

Galilei emphasized the essential role of mathematics in understanding the universe, stating that philosophy is written in the "grand book" of the universe, which cannot be understood unless one first learns the language of mathematics (Galilei 1623, 183).

2) Blaise Pascal (1623–1662)

The French mathematician and philosopher considered both mathematics to be the highest tool of reason and faith to be essential. He believed that mathematics trains reason, but reason alone is not enough and faith illuminates the path of the heart. Blaise Pascal, both a mathematician and a Christian philosopher, viewed mathematics as a means to approach—but not to replace—faith. In Pensées, Pascal distinguished between the "God of philosophers" and the "God of Abraham, Isaac, and Jacob," asserting that while reason and mathematics could guide one toward faith, only the heart could truly perceive God (Pascal, 1995, pp. 122–23).

Similarity with Allameh's thinking and mysticism: Mathematics is the path of reason, but intuition and faith are also essential.

3) Albert Einstein (1879-1955)

Einstein regarded mathematics as the essential tool for understanding the universe. He believed that the laws of physics, particularly those revealed through his theory of relativity, expressed the precise order and harmony of nature (Einstein 1987, p. 13). Regarding religion, Einstein did not believe in a personal God who intervenes in human affairs. Instead, he aligned more closely with Spinoza's concept of God, viewing divinity in terms of the orderly structure of the universe rather than in supernatural intervention. He famously stated, "I believe in Spinoza's God, who reveals himself in the orderly harmony of what exists, not in a God who concerns himself with fates and actions of human beings" (Einstein 1930, pp. 36-40).

In Einstein's perspective, mathematics serves as the language of nature, a means to uncover the underlying laws and rational order of the cosmos. This understanding of universal order, however, was distinct from religious faith in a personal deity.

4) Kurt Gödel (1906-1978)

The great mathematician and logician Gödel believed that mathematical truths have an independent and eternal existence. He believed that this numerical and logical order in the world was a sign of absolute reason and order, which is similar to the Islamic philosophical and mystical view.

Gödel strongly believed in mathematical realism (Platonism), meaning that mathematical truths exist independently of human minds. He argued that numbers and mathematical principles are real entities that can be discovered rather than invented. His Incompleteness Theorems demonstrated inherent limitations in formal

systems, showing that not all truths in mathematics can be formally proven (Gödel, 1931, pp. 173–198). Regarding religion and metaphysics, Gödel held complex philosophical and theological views. He believed in the existence of God and an underlying rational order in the universe. Notably, he developed a formal ontological proof for God's existence, using logical and mathematical reasoning (Dawson, 1997, p. 142). For Gödel, mathematics reflected the rational and stable order of the universe, which was consistent with his belief in a logically structured cosmos created by God. He expressed his religious-philosophical ideas primarily through mathematics and logic, rather than through personal or mystical religious experience (Dawson, 1997, p. 145).

5) Roger Bacon (1219–1292)

He considered mathematics to study the laws of nature and interpret reason. In the dimly lit halls of a 13th-century English monastery, a young scholar named Roger Bacon bent over his manuscripts, quill in hand, pondering the mysteries of the universe. For him, numbers and geometric forms were not mere abstractions; they were the language in which God Himself had written the cosmos. He believed that to understand the natural world through mathematics was to peer into the mind of the Creator (Bacon, 1267; Lindberg, 1992, p. 145). Bacon urged his contemporaries to look beyond blind acceptance and to observe, measure, and calculate, for he held that empirical investigation, guided by mathematical reasoning, could illuminate the hidden order of creation. To study arithmetic, geometry, or optics was, in his view, a deeply spiritual endeavor, a way to honor the divine wisdom embedded in nature. Mathematics, therefore, was not merely a tool for solving worldly problems; it was a sacred key to unlocking the patterns by which God governed the universe (Lindberg, 1992, p. 148).

6) Nicolaus Copernicus (1473–1543)

Copernicus presented the heliocentric theory with precise

mathematical calculations. He regarded mathematics as the essential tool for understanding the structure of the cosmos. Through careful astronomical calculations and geometric reasoning, he demonstrated that the planets, including Earth, revolve around the Sun, rather than the Sun revolving around the Earth (Copernicus, 1543; Gingerich, 2004, p. 57). For Copernicus, the precise order of planetary motion reflected the wisdom and harmony of God's creation. Studying mathematics and astronomy was, therefore, not merely a scientific pursuit but a way to uncover the divine laws governing the universe. Despite potential conflicts with the Church's traditional geocentric view, Copernicus emphasized that scientific investigation and religious faith could coexist, as both sought understanding of God's creation (Gingerich, 2004, p. 60).

7) Gottfried Wilhelm Leibniz (1646–1716)

Leibniz believed that God created the world based on logic and mathematics. He viewed mathematics as a fundamental tool for understanding the universe and its divine order. He believed that the cosmos was created in perfect harmony by God, and that mathematical principles provide the language through which humans can comprehend this rational design (Leibniz, 1710; Rescher, 1991, p. 45). Leibniz introduced the Principle of Sufficient Reason, asserting that nothing occurs without a reason, and developed the concept of pre-established harmony, according to which mind, body, and nature are perfectly coordinated from the outset. This framework demonstrated, for Leibniz, the wisdom and rationality of God's creation (Garber, 1995, p. 78). For him, studying mathematics and logic was not merely an intellectual exercise but a way to uncover the rational and divine structure of reality, bringing humans closer to an understanding of God's order in the universe (Rescher, 2000, p. 52).

8) Johannes Kepler (1571–1630)

Johannes Kepler believed that God had created the universe according to mathematical harmony. For him, studying the laws of planetary motion was equivalent to reading the "language of God" inscribed in the cosmos. He wrote that geometry is one of the eternal patterns of God and that mathematical beauty reveals divine design (Kepler, 1997, p. 85).

9) René Descartes (1596–1650)

René Descartes, the founder of analytical geometry, argued that the certainty and clarity of mathematical reasoning reflected God's perfection. In Meditations on First Philosophy, he explained that mathematical truth depends on the existence of a benevolent and non-deceptive God, who endowed human reason with the capacity to discern truth through logic and mathematics (Descartes, 1996, pp. 45–47).

10) Isaac Newton (1642–1727)

Isaac Newton's views on mathematics and religion were both fascinating and distinctive. He was not only a prominent mathematician and physicist but also deeply religious. Newton believed that the universe was created by God with order and regularity, and that natural laws, such as the laws of motion and gravity, reflected divine will. He considered mathematics to be the primary tool for discovering this order (Westfall 1993, p. 301). He maintained that God was the ultimate cause of all things, and that the laws of physics demonstrated divine wisdom and providence (Dobbs, 1975, p.123). For Newton, the study of mathematics and natural sciences was not only a scientific endeavor but also a form of rational worship, as understanding the laws of the universe allowed humans to perceive God's greatness and wisdom (Hall, 1992, p. 45).

In other words, Newton regarded mathematics as a means to

comprehend God and divine order, and he believed that understanding natural laws deepened one's appreciation of faith and religion.

11) Leonhard Euler (1707–1783)

Leonhard Euler, one of the most prolific mathematicians in history, was also deeply religious. In Letters to a German Princess, he argued that the harmony of mathematical laws in nature testified to divine wisdom. Euler wrote that "the study of mathematics is the study of the works of God," linking the pursuit of science directly with faith (Euler 1795, 14).

12) Carl Friedrich Gauss (1777–1855)

Although Carl Friedrich Gauss rarely discussed religion in his public writings, his private letters show that he perceived the beauty and order of mathematics as manifestations of divine reason. For Gauss, mathematical harmony was not a human invention but a reflection of the rational structure embedded in creation (Dunnington, 2004, p. 278).

From Kepler to Newton, and from Descartes to Euler and Gauss, these thinkers perceived mathematics as a sacred language—a bridge between human intellect and divine truth. To them, mathematical discovery was not merely an intellectual pursuit but a form of devotion: a rational act of deciphering the laws through which God governs the universe.

Thus, both Muslim and non-Muslim scientists believed in the importance of order, number, and mathematics in understanding the world, but Muslims attribute this order directly to the wisdom and existence of God, while non-Muslims often attribute it to universal reason, the laws of nature, or cosmic harmony. Mathematics in the modern West, after Rennes, as an independent scientific analysis, but

many Western philosophers still consider it a tool for understanding the order of the world and divine thought:

5. The perspective of Indian and Eastern thinkers

Mathematics in ancient India was more than a tool for calculation; it was a means of understanding the natural and spiritual laws of the world. The texts of the Vedas and the Shalva Sutras show that geometry and numbers were used in religious rituals and astronomical calculations (Joseph, 2011), and mathematical concepts were seen as tools for understanding the cosmic order.

5.1. Sacred numbers and ratios

In Samkhya and Yoga philosophy, numbers and ratios are cosmic symbols. Specific ratios, such as the golden ratio, are interpreted as reflecting the order of the universe and the harmony between its components. Accurate astronomical and calendrical calculations had not only practical applications, but were also tied to religious rituals and the timing of sacred occasions (Sarasvati Amma, 1999, pp. 20-60).

5.2 . Mathematics and astronomy

Ancient Indian astronomy determined the movements of the planets and the sun based on precise mathematical calculations. These calculations were used in religious calendars and rituals, and showed that understanding the order of the universe required mathematical tools. Thus, mathematics in ancient India was naturally intertwined with religion and philosophy.

5.3 . Spiritual analysis

Numbers were seen not only as a means of counting but also as spiritual symbols and a means of understanding the levels of existence.

This view later influenced Islamic thought and Eastern mystical philosophy, paving the way for the development of mathematical and theological thought in the Islamic world.

6. The relationship between mysticism and numbers in the works of Ibn Arabi and Suhrawardi

In Islamic mysticism, number and ratios are not only quantitative concepts but also symbols of existential levels and the manifestation of divine unity in plurality:

1) Number as a symbol of existence

In the works of Ibn Arabi, especially in Al-Futuhat Al-Makkiyyah and Fusous Al-Hikam, number is a symbol of the levels of manifestation of truth. He says:

> "Al-Wahid la yasadr anhu illa al-Wahid"
>
> (Nothing emanates from the One except the One)
>
> However, since the unity of truth is manifested in various mirrors, plurality arises; this plurality appears in the form of numbers.
>
> Number one (1) → Divine Essence (absolute, unique and indivisible existence)
>
> Number two (2) → First manifestation; the emergence of the relationship between the Creator and the creature (the first intellect
>
> Number three (3) → The relationship between unity and plurality; that is, the world of example
>
> Number four (4) → A symbol of the four elements and material balance
>
> And the number ten (10) is the end of the complete cycle of

manifestation (because the return to the one is at a higher level).

Ibn Arabi says:

"Every number testifies to the one, and every multiplicity returns to him."

That is, every number testifies to the oneness, and every multiplicity returns to him. In his view, numbers are the symbolic language of the universe; for this reason, in theoretical mysticism, numerical analysis (for example, the ratio of divine names and the levels of existence) is a tool for understanding monotheism. In the thought of Ibn Arabi and his commentators, the levels of existence begin with "one" and are manifested in numerical levels up to "ten." These numbers are a symbol of the levels of intellect, soul, nature, and matter. In his book, Suhrawardi considers existence to be levels of the lights of Cairo and Nazla, and he attributes a mathematical order and sequence to these levels (Suhrawardi, 1978). He writes:

"The whole light is above the light, To the light of lights."

(Every light has a light above it to reach the light of lights)

This series of lights can be expressed in both logical and numerical structures

Light of lights → real unit

Abstract lights → rational order (like the ranks of natural numbers)

Contemplated and descending lights → material multiplicities (the tangible world)

In Suhrawardi's mysticism, the relationship between lights is like geometric and numerical relationships; he even sometimes uses

the expression “light proportion” which is very similar to the concept of proportion in mathematics.

Consequently, in both schools (Ibn Arabi and Suhrawardi), number and relationship are a code of the series of existence — and mathematical order is a reflection of the light and divine order.

2) Number in poetry and mysticism

Maulvi, Attar and Hallaj have repeatedly used number to express the code of unity

Numbers went and the numberless remained its companion

Numbers were a role and that meeting It remained

In their view, mathematics is not the antithesis of mysticism, but its coded language; because every ratio and proportion in the world is a sign of divine balance and justice.

Rumi and numerical poetry

In his Masnavi, Rumi repeatedly considers number as a code of monotheism

These numbers reminded him of Ahad

Because they came from Ahad, they went forth

That is, numbers (plurality) are actually a reminder of Ahad (unity), because they came from Him.

Or in another place he says:

One by one passed until it became countless

That one remained and in him remained Ahad

Rumvi says that a human being who seeks must pass through number (plurality) to reach "numerosity" which is divine unity. He

considers number as an allegory of the steps of the journey and path

In the Quran, mysticism, and Islamic philosophy, number and order are not merely computational concepts, but rather a sign of God's presence in the structure of the world. In the view of Allamah Tabataba'i, mathematics is the language of God's intellect in creation. In the view of Ibn Arabi and Rumi, mathematics is the melody of God's unity in plurality, and both come together in one truth. The world is a "divine numerical book", the intellect reads it, the heart sees it.

7. Islamic philosophy and mathematics

7.1. Ibn Sina and rational analysis

Ibn Sina (980–1037) considered mathematics to be a means of connecting the sensible and the intelligible. He explains that mathematics, with its abstract concepts, is a means of understanding the laws of the world and ultimately of knowing God (Ibn Sina, 1320, p. 56). In his view, the mathematician approaches the order of creation by analyzing numerical and geometric laws.

7.1.1. Reason and mathematics

In his philosophy, Ibn Sina considers reason to be the main tool for understanding the world. He believes that mathematics and geometry are abstract expressions of reason for understanding beings and the order of the universe. Mathematics is a means of understanding the natural and divine order, because reason discovers the truth of beings through concepts and relationships (Ibn Sina, 1027, pp. 11-I2).

7.1.2. Relationship with religion

Ibn Sina distinguishes between reason and revelation, but considers them complementary.

Reason: to understand the cause and natural laws and the order of the world.

Revelation and religion: to guide man to morality and ultimate happiness and to understand the sublime truths that reason alone may not be able to reach.

Thus, mathematics is not only a rational science, but also a tool for understanding the signs of divine order in the world. He considers the order and proportion of beings to be a sign of God's wisdom.

7.1.3. Mathematics and natural philosophy

Avicenna used geometry and mathematics in natural philosophy (physics and metaphysics) to explain the proportions and relationships in the movement and formation of the world. He believed that the mathematical order in the universe was a sign of active reason (aql fayyil) and divine wisdom.

7.2. Omar Khayyam (1048-1141)

Reason, mathematics, and religion can have different combinations and lead humans to a precise understanding of the world and divine wisdom.

Mathematics and astronomy	→	tools for understanding the divine order in the world.
Calendar and timing	→	practical and religious needs of man.

7.2.1. Mathematics and astronomy

Omar Khayyam considered mathematics to be an accurate tool for astronomical calculations and calendaring. He reformed the Jalali calendar based on accurate astronomical calculations, which indicated

the cosmic order and the need for mathematical calculations to understand the order of the world. This reform of the calendar was both scientifically accurate and important for adjusting the times of religious worship and ceremonies (Rashed, 2000, pp. 87-90).

7.2.2. Geometry and algebra

In algebra and solving cubic equations, Khayyam showed that mathematics is a rational tool for understanding the structure and order of the world. Using geometric methods, he showed that every mathematical problem has a logical and orderly solution that can help us understand the world.

7.2.3. Philosophy and worldview

In his Rubaiyat, Khayyam addresses the theme of order, the transience of the world, and the unity of existence, which is in line with Islamic mystical and philosophical views. He saw mathematics as a tool for rational understanding of the order of the world and connecting humans to divine wisdom.

7.3. Khwaja Nasiruddin Tusi (1201-1274)

Tusi considered mathematics to be the key to understanding astronomy and natural philosophy. In (Tusi, 1981; Tusi, 1986), he showed that the mathematical and celestial order reflected divine wisdom. He regarded mathematics as an essential tool for understanding the order and harmony of the universe. He believed that mathematical and geometric studies were not merely practical sciences but also means of intellectual and spiritual insight, allowing humans to perceive the wisdom and power of God (Tusi, 1990; Nasr, 1993, p. 112). Tusi's work in astronomy, particularly at the Maragheh observatory, demonstrated

that the motions of planets and stars could be described through precise mathematical laws, reflecting divine order. For him, the study of mathematics and natural sciences constituted a form of scientific worship, as uncovering the laws of creation brought humans closer to understanding God's greatness (Dallal, 1999, p. 87). In Tusi's philosophy, reason and religion were harmonized: mathematics served as a bridge between intellectual inquiry and spiritual knowledge, emphasizing that the pursuit of knowledge could deepen both scientific understanding and religious insight (Nasr, 1993, p. 114).

7.4. Jamshid Ghiyasuddin Kashani (1380-1436)

Ghiyas-ud-Din Kashani was a pioneer in geometry and algebra. Kashani analyzed quadratic and cubic equations and considered mathematics as a tool for understanding the divine order.

7.5. Abu Nasr al-Farabi (870–950)

Abu Nasr al-Farabi , the renowned Islamic philosopher, addressed the relationship between mathematics and religion in his philosophical works. Although his approach is primarily philosophical and rational, rather than empirical, he regarded mathematics as a key tool for understanding the ordered structure of the universe, which reflects divine wisdom (Farabi, 2001a, pp.152–155). Farabi argued that mathematics provides the rational means to apprehend cosmic order and harmony. He believed that the universe follows a logical arrangement that can be comprehended through mathematical sciences such as arithmetic and geometry. This logical order, according to Farabi, mirrors the wisdom of God, and thus, mathematical knowledge facilitates a deeper understanding of the divine (Farabi, 1982, pp. 78–81). Moreover, Farabi emphasized the educational role of mathematics. He considered

the study of mathematics essential for cultivating rational thought and philosophical reasoning, which are necessary for grasping religious principles and divine wisdom. Mathematics, therefore, is not merely a scientific discipline but also a moral and spiritual tool that strengthens intellectual faculties and religious understanding (Gutas, 1998, pp. 212–215). In his works on happiness (Farabi, 1995) and philosophical doctrines (Farabi, 2001b), Farabi further maintained that knowledge of numbers, geometry, and astronomy enables humans to comprehend the principles of creation and divine order, thereby deepening one's belief in the unity and wisdom of God (Farabi, 1995, pp. 45–49).

In summary, Farabi viewed mathematics not only as a scientific endeavor but as a complementary path to religion, providing rational insight into the divine order of the universe and assisting in the intellectual and spiritual development of human beings.

8. Muslim mathematicians and the application of religion

8.1. Muhammad ibn Musa al-Khwarizmi (780-845)

Al-Khwarizmi was the founder of algebra and algorithms. His works on the calculation of khums, zakat, and astronomical problems show that mathematics in Islamic civilization was tied to religion and the practical affairs of society (Bergern, 1986, p. 45).

8.2. Abu Raihan Biruni (973–1048)

Abu Rayhan -Biruni regarded mathematics and astronomy as essential tools for understanding the order of the universe and the laws of nature. He demonstrated that studying mathematics and astronomy was not only a scientific pursuit but also a philosophical and spiritual path toward comprehending God's wisdom and power (Biruni, 1946; Nasr, 1993, p. 125). For Biruni, the study of mathematics and natural

sciences allowed humans to perceive the precise order of the cosmos and the harmony among created entities, reflecting the governance of the universe by a wise and just God. He emphasized that such studies are compatible with religion and philosophy, guiding humans toward deeper reflection on creation and the Creator (Nasr, 1993, p. 127).

8.3. Ibn Haytham (965-1040)

In optics and geometry, Ibn Haytham considered mathematical analysis a means of understanding the divine order (Ibn Haytham, 1989).

8.4. Allameh Hassanzadeh Amoli

In the contemporary era, Hassanzadeh Amoli also considers mathematics as a means to discover divine wisdom and links the rational analysis of the order of the world with religious teachings (Hassanzadeh Amoli, 1983, pp. 212-14).

9. The role of religion in the emergence and development of Islamic mathematics

In the history of Islamic civilization, religion was not only not an obstacle to the growth of science, but was one of its main drivers, especially in mathematics.

9.1. Religious motivations

1) Calculations of the direction of the Qibla and prayer times required spherical astronomy and trigonometry.
2) The lunar calendar and the month of Ramadan led to the development of astronomical calculations.
3) Jurisprudential issues such as inheritance, wills, and zakat led to the formation of the science of algebra (in the works of Al-Khwarizmi).

9.2. Mathematics as worship

Scholars such as Abu Rayhan al-Biruni and Nasir al-Din al-Tusi believed that understanding the order of the universe was a form of worship, because through understanding order, man came to know the Creator of order.

In the introduction to Tahrir al-Euclid, Tusi wrote:

> "The science of geometry guides the soul towards truth, for reason finds peace in its order."

9.3. Art and sacred geometry

1) In Islamic architecture, geometry is not just a decoration, but also a manifestation of monotheism in matter.
2) The repetitive and symmetrical patterns in mosques express unity in plurality.
3) Specific numbers (4, 8, 12) often symbolize the levels of the universe or divine attributes.

10. Analysis of contemporary mystics and sages

10.1. Allamah Tabataba'i's commentary on mathematical order in the verses of the Quran

Allama Tabataba'i (1281–1381 AH) believes in his commentary on Al-Mizan that understanding the order of the world is not possible without rational and mathematical understanding. He considers mathematics as a tool for analyzing order and creation and believes that number and ratio are manifestations of divine unity and wisdom (Tabataba'I, 1983, p. 45).

Another view is superficially different from the previous one—one intuitive and the other rational-interpretive—but deep down,

both point to the same truth: that the world is built on order, number, and proportion, and that this order is a sign of divine monotheism. In his commentary on al-Mizan, Allama Tabataba'i repeatedly emphasizes that the Quran refers to a "precise and calculated order" in the universe. He sees order not as a coincidence but as a sign of divine wisdom, and he sees the human intellect as capable of understanding this order.

Verses related to order and measure

One of the axes of Allamah's commentary is the noble verse: Indeed, we have created everything with a measure. (Quran, 54: 49).

In his commentary on this verse, Allamah says: What is meant by "Qadr" is a specific system that is present in all beings; this system is the law of proportion and balance that the intellect understands mathematically. In fact, in his view, "Qadr" = the numerical and mathematical law of creation. For this reason, any small change in this system causes corruption of the whole (a close reference to the concept of "cosmic constants" in modern science).

Verses related to balance and equilibrium

In the interpretation of the verse: “And the heavens He raised and set the balance” (Quran: 55:7).

Allamah says: Balance means measurement, balance and precise order in the relationships of existence, and this balance is what reason abstracts mathematical and physical principles from. According to him, the divine balance in the Quran is what appears in science in the form of laws and ratios. Therefore: Both knowledge and faith are united in the interpretation of “balance”. Science says that ratios are precise, faith says that this precision is from the wisdom of

God. Allamah Tabataba'i points out in places in Quranic exegesis and Principles of Philosophy that the world is like a "mathematical book" whose verses are read to reason. Every being in this book is in a specific relationship with other beings; And these ratios are the same numerical and structural relationships that the empirical and mathematical sciences describe. According to Allama: the world is the diagram of a divine equation, and the rational human being is the interpreter of this equation. The result in one sentence: in mysticism, number is the code for the presence of God; in Allama's philosophy, it is the proof of the existence of God.

Mysticism and philosophy appear to have two different languages. Mysticism is the language of the heart and intuition. Philosophy is the language of reason and proof. But both seek to understand the same truth. That the world is built on ratios, measurements, and precise order, and this order is a reflection of divine wisdom and unity. In mathematics, this order is expressed in the form of numbers and relationships; in religion, in the form of quantity and measure; and in mysticism, in the form of manifestation and levels of existence.

Number and order are signs of God's presence in the structure of the world. In the mystic's view, mathematics is the song of monotheism; in Allama's view, it is the proof of monotheism.

"Indeed, in the creation of the heavens and the earth, and the alternation of night and day, are signs for those endowed with understanding" (Quran, 3: 190).

It says that the amazing order in phenomena indicates the existence of a rational principle, and the human intellect can reach monotheism by contemplating this order.

Allamah says in his commentary:

The alternating order of night and day indicates the precise proportion of celestial movements. Every temporal and spatial relationship in the universe is numerical, and the intellect understands the divine order from it, and concludes that the number in creation is a sign of its rationality; and this rationality is the proof of the existence of the divine intellect behind the system of the universe. In his works, including Quranic exegesis and Principles of Philosophy and the Method of Realism, Allamah Tabataba'i considers reason to be one of the divine arguments and considers it a tool for understanding the order of the world and discovering the truth (Tabataba'i, 1987, p. 52). Reason operates in two ways:

1) Understanding axioms, such as mathematical principles including equality and non-contradiction
2) Deducing arguments to discover the relationships between beings

Mathematics for Allamah is not only a tool for calculation, but also a mirror of the order of existence that guides human reason to recognize absolute truths. He also considers mathematical concepts to be related to external realities and believes that the human mind abstracts mathematical concepts from the quantity and quantity in beings (Tabataba'I, 1987, p. 115).

10.2. Hassanzadeh Amoli

Hassanzadeh Amoli's work on the relationship between religion, mathematics, and the order of the world is also noteworthy. In his works, especially in his mathematical treatises and seminary courses, he has pointed out the importance of mathematics in understanding the

evolutionary order of the world. For example, in a treatise published in 1983, he examined mathematical and geometric issues and showed how these sciences can give humans a better understanding of the structure and order of the world. Also, in his seminary courses, which he taught in 111 sessions at the Qom Seminary, he addressed topics such as Qiblahology, equinoxes and waning moons, and other issues related to mathematics and astronomy. He believed that mathematics, especially in areas related to seminary, is essential for every religious scholar and can be a suitable tool for a more accurate understanding of verses and narrations related to time, Qiblah, and crescent. In this regard, Allameh Hassanzadeh Amoli believed that mathematics and natural sciences, along with philosophy and mysticism, can help humans achieve a deeper understanding of the divine order and the origin of existence. By combining these sciences, he attempted to present a comprehensive and harmonious picture of the world in which religion, reason, intuition, and science simultaneously serve the understanding of truth. Hassanzadeh Amoli, from a philosophical and mystical perspective, considers mathematics as a language for expressing truth and the order of existence. He believes that mathematical analysis facilitates human understanding of the laws of creation and divine verses, and mathematics is considered a form of rational worship (Hassanzadeh Amoli, 1983).

To strengthen contemporary relevance, the paper incorporates insights from modern Islamic thinkers, particularly Allameh Hasan-zadeh Amoli. His analyses are used to illustrate how classical Islamic metaphysical and mathematical thought continues to inform current interpretations of unity, order, and divine manifestation within mathematical reasoning.

11. Adaptive analysis

The table below shows an example of matching views:

Philosopher/ Mathematician	Period	Key Perspective
Pythagoras	Ancient Greece	Sacred numbers, cosmic order
Plato	Ancient Greece	The geometric world, the language of God
Aristotle	Ancient Greece	Mathematics, the mediator between reason and the tangible
Al-Khwarizmi	Islam	Islam: Al-Jabr, a practical and religious tool
Ibn Sina	Islam	Mathematics, the medium between the tangible and the reasonable
Khayyam	Islam	Analyzing equations, discovering hidden order
Tusi	Islam	Analyzing equations, discovering hidden order
Allameh Tabataba'i	Contemporary	Mathematics, a tool for understanding order and unity
Hassanzadeh Amoli	Contemporary	Mathematics, a means of understanding truth and rational worship
Leibniz	Modern West	The world was created based on logic and mathematics
Copernicus	Modern west	Mathematical calculations to understand cosmic laws
Johannes Kepler	1571–1630	Saw mathematical harmony as divine order; believed studying the heavens reveals God’s geometric plan

Philosopher/ Mathematician	Period	Key Perspective
René Descartes	1596–1650	Considered mathematics the model of clear and certain knowledge grounded in God's perfection
Blaise Pascal	1623–1662	Valued reason and mathematics but held that faith transcends rational proof; "the heart has its reasons."
Isaac Newton	1642–1727	Viewed mathematical laws as expressions of divine governance; studying nature was a form of worship

The comparative discussion now systematically examines the views of Plato, Ibn Arabi, Leibniz, and Mulla Sadra. While Plato's philosophy emphasizes the ontological reality of mathematical forms as a reflection of cosmic order, Ibn Arabi interprets numerical and geometrical patterns as expressions of divine unity, linking the structure of mathematics directly to the manifestation of the Absolute. Leibniz's perspective highlights the pre-established harmony and rationality embedded in the universe through mathematical logic, whereas Mulla Sadra integrates metaphysical concepts such as the primacy of existence and the gradation of being to interpret mathematical structures as signs of the divine order.

12. Conclusion

Historical and philosophical analysis shows that the connection between religion and mathematics is intrinsic and fundamental. In ancient Greece, mathematics was presented as the language of God; in India, it was a tool for understanding cosmic order and religious rituals; in the Islamic world, mathematicians and philosophers considered mathematics as a means of understanding divine wisdom;

and in the modern West, mathematics remains the language of nature and a tool for understanding the order of the world.

The main conclusion is that although the approaches and applications have been different, the common axis of all these ideas is the "search for order, unity and truth". Therefore, mathematics is not only an abstract and instrumental science, but also a tool for realizing reason and faith and understanding the wisdom of creation.

The conclusion moves beyond a descriptive summary, highlighting that mathematics in Islamic thought functions as a tool to express and confirm divine unity (tawhid). By juxtaposing Islamic and Western philosophical frameworks, the paper shows that while Western traditions may emphasize abstract mathematical realism, Islamic perspectives integrate mathematics as a means of perceiving the inherent order of creation and its connection to the divine. This analytical synthesis underscores the paper's contribution to understanding the interplay between mathematics, metaphysics, and theology across different intellectual traditions.

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