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Astronomi dalam Al-Quran: Studi Perbandingan Geosentris dan Heliosentris

Astronomy in The Quran: Comparative Study of Geocentric and Heliocentric

علم الفلك في القرآن الكريم: دراسة مقارنة بين مركزية الأرض ومركزية الشمس

Zulkarnain Muhammad Ali[1], Eneng Musfiroh[2]
Tazkia University[1], STIU Darul Hikmah[2]
zulkarnain@tazkia.ac.id[1], musfiroheneng12@gmail.com[2]

Abstrak
Kajian Al-Qur'an telah berkembang secara signifikan sejak zaman Nabi Muhammad ﷺ hingga saat ini, mencerminkan relevansinya yang tak lekang oleh waktu dan penekanannya pada ilmu pengetahuan, termasuk astronomi. Al-Qur'an memuat banyak ayat yang merujuk pada fenomena langit, mendorong refleksi tentang kosmos sebagai tanda kebesaran dan kebijaksanaan Allah. Penelitian ini mengeksplorasi perspektif Islam tentang geosentrisme dan heliosentrisme dengan menganalisis ayat-ayat Al-Qur'an yang berkaitan dengan astronomi. Penelitian ini menyelidiki apakah Al-Qur'an menyiratkan alam semesta yang berpusat pada Bumi (geosentrisme) atau selaras dengan model heliosentris, yang menempatkan matahari sebagai pusatnya. Penelitian ini menggunakan pendekatan filosofis, ilmiah (`ilmi), dan sastra (adabi) untuk mengkaji interpretasi para ulama seperti Fakhruddin Al-Razi, Musthafa Al-Maraghi, dan lainnya. Temuan menunjukkan keragaman pendapat ilmiah, yang dibentuk oleh pengetahuan ilmiah yang tersedia pada era mereka masing-masing. Beberapa ayat tampaknya mendukung pandangan geosentris, sementara yang lain selaras dengan gagasan heliosentris. Variasi ini menggarisbawahi bagaimana penafsiran Al-Qur'an berkembang seiring kemajuan ilmu pengetahuan, yang mencerminkan interaksi dinamis antara wahyu dan akal dalam pemikiran Islam. Studi ini menekankan peran Al-Qur'an dalam mendorong penyelidikan dan relevansinya yang berkelanjutan dalam menjembatani ajaran agama dengan sains modern. Studi ini menyoroti perlunya keterlibatan ilmiah yang berkelanjutan untuk memperdalam pemahaman tentang Al-Qur'an dan dunia alam.

Kata Kunci: Al-Qur'an, Astronomi, Geosentrisme, Heliosentrisme, Astronomi dalam Al-Qur'an, Falak, Fakhruddin Al-Razi, Musthafa Al-Maraghi

Abstract
The study of the Qur'an has evolved significantly from the time of the Prophet Muhammad ﷺ to the present, reflecting its timeless relevance and emphasis on knowledge, including

astronomy. The Qur'an contains numerous verses referencing celestial phenomena, encouraging reflection on the cosmos as a sign of Allah's greatness and wisdom. This research explores Islamic perspectives on geocentrism and heliocentrism by analyzing Qur'anic verses related to astronomy. It investigates whether the Qur'an implies an Earth-centered universe (geocentrism) or aligns with the heliocentric model, which places the sun at the center. The study uses philosophical, scientific (`ilmy), and literary (adabi) approaches to examine the interpretations of scholars such as Fakhruddin Al-Razi, Musthafa Al-Maraghi, and others. Findings show a diversity of scholarly opinions, shaped by the scientific knowledge available during their respective eras. Some verses appear to support a geocentric view, while others resonate with heliocentric ideas. This variation underscores how Qur'anic interpretation evolves alongside scientific advancement, reflecting the dynamic interplay between revelation and reason in Islamic thought. The study emphasizes the Qur'an's role in encouraging inquiry and its continued relevance in bridging religious teachings with modern science. It highlights the need for ongoing scholarly engagement to deepen understanding of both the Qur'an and the natural world.

Keywords: *Qur'an, Astronomy, Geocentrism, Heliocentrism, Astronomy in the Qur'an, Falak, Fakhruddin Al-Razi, Musthafa Al-Maraghi*

الملخص

شهدت دراسة القرآن الكريم تطورًا ملحوظًا منذ عهد النبي محمد ﷺ وحتى يومنا هذا، مما يعكس أهميته الخالدة وتركيزه على المعرفة، بما في ذلك علم الفلك. يحتوي القرآن الكريم على آيات عديدة تشير إلى الظواهر السماوية، وتشجع على التأمل في الكون كدليل على عظمة الله وحكمته. يستكشف هذا البحث وجهات النظر الإسلامية حول مركزية الأرض ومركزية الشمس من خلال تحليل الآيات القرآنية المتعلقة بعلم الفلك. ويبحث فيما إذا كان القرآن الكريم يشير إلى كون مركزه الأرض (مركزية الأرض) أو يتماشى مع نموذج مركزية الشمس، الذي يضع الشمس في المركز. تستخدم الدراسة مناهج فلسفية وعلمية وأدبية لدراسة تفسيرات علماء مثل فخر الدين الرازي ومصطفى المراغي وآخرين. تُظهر النتائج تنوعًا في الآراء العلمية، التي تشكلت بناءً على المعرفة العلمية المتاحة في عصورهم. يبدو أن بعض الآيات تدعم وجهة نظر مركزية الأرض، بينما تتوافق أخرى مع أفكار مركزية الشمس. يُبرز هذا التباين كيف يتطور تفسير القرآن الكريم مع التقدم العلمي، مما يعكس التفاعل الديناميكي بين الوحي والعقل في الفكر الإسلامي. تُشدد الدراسة على دور القرآن الكريم في تشجيع البحث العلمي وأهميته المستمرة في ربط التعاليم الدينية بالعلم الحديث. كما تُبرز الحاجة إلى تواصل علمي مستمر لتعميق فهم كل من القرآن الكريم والعالم الطبيعي.

الكلمات المفتاحية: القرآن الكريم، علم الفلك، مركزية الأرض، مركزية الشمس، علم الفلك في القرآن الكريم، فلك، فخر الدين الرازي، مصطفى المراغي

INTRODUCTION

The study of the Qur'an has significantly evolved over the ages, from the time of the Prophet Muhammad to the present day. This shows that the Qur'an remains relevant to changing times. Since the beginning of Islamic history, great importance has been placed on knowledge, including astronomy. The Qur'an, a holy book that addresses matters of faith, Islamic law, and morality, also contains verses that hint at scientific realities, encouraging people to study, discuss, and analyze them. The Qur'an also contains verses that explicitly discuss astronomy and celestial objects. For example, it speaks about the orbits of the sun and the moon, the expansion of the universe, and other cosmic phenomena. These verses have fascinated both Islamic scholars and scientists, leading to various interpretations and a deeper understanding of the universe. Such references demonstrate the Qur'an's encouragement for mankind to ponder and explore the vastness of the cosmos.

Islam emphasizes the importance of understanding the universe to appreciate the greatness and wisdom of Allah. One way to recognize Allah's greatness is by observing His creations, which we can see all around us. Many of Allah's creations are visible, such as the earth under our feet, the sun that lights up the day, the moon that brightens the night, and various natural phenomena. In several verses, Allah calls on humans to reflect on His creations. For example, in Surah Al-Ghashiyah verses 17-20, Allah says: *"Do they not look at the camel, how it is created? And at the sky, how it is raised? And at the mountains, how they are set up? And at the earth, how it is spread out?"*

Allah commands His servants to think about His creations, which reflect His power and greatness. These verses specifically direct humans to observe Allah's creations, including the camel, which is made with an extraordinary body structure and strength, and is useful in many aspects of life. Through this command, Allah invites humans to understand His greatness by observing His complex and beneficial creations. Science knowledge is rapidly advancing. Whether in Chemistry, Physics, or Astronomy, scientists conduct research that creates new knowledge. Research is not easy; it requires sharpness and deep understanding in the respective fields. However, some of these scientists are non-Muslims whose research is based on objective studies to bring forth new knowledge. Gradually, their findings are refined as newer, more accurate research emerges. This is evident in astronomical research discussing the solar system. It was believed that the sun revolved around the Earth, known as geocentrism.

However, over time, astronomical knowledge evolved, leading to the heliocentric model. Heliocentrism is the astronomical model where the Earth revolves around the sun at the center of the solar system. Copernicus changed the worldview paradigm by asserting that the Earth is not the center of the solar system, but the Sun is. This perspective sparked controversy, especially among religious leaders.

The Qur'an, as a fundamental principle in Islamic teachings, is believed to have significant connections with modern scientific concepts. In this context, an interesting debate arises regarding the comparison between verses that are geocentric and heliocentric. In our current era, where scientific knowledge continues to advance rapidly, this research aims to explore Islamic responses to these concepts and how interpretations of Qur'anic verses can apply to understanding geocentric and heliocentric paradigms. This research focuses on exploring whether the Qur'an reflects the earth as the center of the universe (geocentric) or aligns with the heliocentric model, which places the sun at the center. The study aims to

understand how interpretations of these verses can influence the perceptions and beliefs of the Muslim community. Notably, this research is groundbreaking as it has not been previously conducted, highlighting its significance.

RESULTS AND DISCUSSION

The Definition of Astronomy

The word "astronomy" comes from the ancient Greek words "astron," meaning star, and "nomos," meaning law or rule. Therefore, astronomy can be interpreted as "law of the stars" or "rules of the stars." Astronomy is known as the science that studies objects and matter outside the Earth's atmosphere, such as stars, planets, galaxies, comets, and more, as well as phenomena related to celestial events like lunar and solar eclipses, sunspots, and others. The science of astronomy actually originates from human curiosity about what they see and observe in the sky. Astronomy is the scientific study of celestial objects like stars, planets, moons, asteroids, and galaxies, as well as other phenomena in the universe. Through observation, data analysis, and mathematical modeling, astronomy aims to understand the origins, evolution, and properties of the universe. This study encompasses various disciplines, ranging from astrophysics, which studies the physical properties of celestial bodies, to cosmology, which seeks to understand the structure and development of the universe as a whole. Today, astronomy generally refers to the study of the sky and the universe with its related phenomena. Genealogically, astronomy itself stems from the Greek word "astronomia" and has the same meaning in Muslim astronomical literature as "Ilm al-Falak" or "Ilm al-Hay'ah." In its development, the term "Ilm al-Falak" has become more popular than "Islamic astronomy." This term is used in a limited scope, specifically related to the study of astronomy connected with worship practices, such as prayer times, the direction of the Qibla, the beginning of months, and eclipses. Ibn Khaldun referred to this science as "Ilm al-Hay'ah." Meanwhile, Al-Khawarizmi stated that this science is called "Ilm at-Tanjim" (stars) in Arabic, while in Greek it is called "astronomia." The word "astro" means star, while "nomia" means science. In other words, "Ilm al-Falak" is the study of celestial bodies, particularly the Earth, Moon, and Sun in their respective orbits, to understand their phenomena for the benefit of humanity, especially for the Islamic community in determining times related to worship.

The History of Astronomy

a. **(Classical Era: A Journey Through Time and Space)**

Astronomy, the study of celestial objects and phenomena, has captivated human curiosity since ancient times. From the earliest civilizations to modern scientific advancements, astronomy has evolved significantly, shaping our understanding of the universe and our place within it. Ancient civilizations such as the Mesopotamians, Egyptians, and Greeks laid the groundwork for astronomy through careful observation of the sky. Mesopotamian astronomers, situated between the Tigris and Euphrates Rivers, developed intricate calendars based on lunar cycles and celestial events like eclipses. These calendars not only marked the passage of time but also guided agricultural activities crucial for their societies' survival.

In Egypt, astronomy was intertwined with religious beliefs and practical applications. The annual flooding of the Nile River, vital for agriculture, was predicted using observations of Sirius, the brightest star in the night sky. Egyptian astronomers

constructed precise sundials and aligned monumental structures like pyramids and temples with astronomical events, showcasing their advanced knowledge of celestial mechanics and architecture. Meanwhile, ancient Greek scholars such as Aristotle and Ptolemy contributed foundational theories about the cosmos. Aristotle proposed a geocentric model of the universe, with Earth at its center and celestial bodies moving in perfect circular orbits around it. Ptolemy refined this model, explaining celestial motions through epicycles and deferents, significantly influencing Western astronomical thought until the Renaissance.

During the medieval period, Islamic scholars like Alhazen (Ibn al-Haytham) and astronomers such as Ibn al-Shatir made significant strides in merging astronomy with physics. Alhazen's work "On the Light of the Moon" laid the groundwork for astrophysics by applying experimental methods to understand celestial phenomena. Ibn al-Shatir's lunar motion model preceded Copernicus' heliocentric theory, challenging Greek astronomical traditions. The Renaissance marked a revival of ancient Greek and Roman learning, leading to the rediscovery of Ptolemy's works and the development of heliocentric models by Copernicus, Kepler, and Galileo. Copernicus' proposition that the planets revolve around the Sun, contrary to the geocentric view, laid the foundation for modern astronomy, emphasizing observation and mathematical accuracy.

b. Modern Astronomy: Technological Advancements and Interdisciplinary Studies

The advent of the 20th century brought revolutionary changes to astronomy with technological innovations such as the telescope and space-based observatories. The Hubble Space Telescope, launched in 1990, provided unprecedented views of distant galaxies, stars, and nebulae, expanding our understanding of cosmic evolution and the origins of the universe. Modern astronomy has diversified into interdisciplinary fields such as astrophysics, astrogeology, and astrobiology. Astrophysics applies principles of physics to study celestial objects, investigating their composition, temperature, and behavior. It explores phenomena like black holes, supernovae, and cosmic background radiation, shedding light on the fundamental laws governing the universe.

Astrogeology extends geological principles to extraterrestrial bodies, analyzing planetary surfaces and geological features to unravel their formation and evolution. It uses data from spacecraft missions and telescopic observations to study Mars' ancient riverbeds, Jupiter's moons, and asteroids' compositions, providing insights into the Solar System's history and potential resources.

Astrobiology, a burgeoning field, investigates the conditions necessary for life to exist beyond Earth. It integrates biology, chemistry, and geology to explore extremophiles on Earth, potential habitats on Mars, and the potential for life in subsurface oceans of icy moons like Europa and Enceladus. Astrobiologists use telescopes to search for biosignatures in exoplanet atmospheres, probing the diversity of planetary systems and the potential for habitable worlds beyond our solar system.

In conclusion, astronomy's journey from ancient observations to modern scientific disciplines has deepened our understanding of the cosmos. From the early calendars of Mesopotamia to the high-resolution images of distant galaxies captured by the Hubble Space Telescope, astronomy has continuously expanded human knowledge and challenged our perspectives on the universe. Today, as interdisciplinary studies continue to reveal discoveries about cosmic phenomena and the potential for life beyond Earth, astronomy

remains at the forefront of scientific exploration, offering endless opportunities to explore the mysteries of the cosmos.

The Common Models of Astronomy

a. Geocentric Model: Ancient Beliefs and Evolution

The geocentric model, derived from the Latin words "geo" (Earth) and "center," asserts that Earth is the stationary center of the universe. This ancient concept dominated early cosmology, notably proposed by the Greek philosopher Aristotle and further developed by astronomers like Ptolemy in his Ptolemaic system. According to this view, celestial bodies such as the Sun, Moon, planets, and stars orbit Earth in circular paths. Aristotle, born in 382 BC, argued that Earth's composition—comprising earth, water, air, and fire—naturally placed it at the center of the universe, where it remained motionless. This theory persisted for centuries, influencing ancient beliefs and interpretations of natural phenomena. Later, Islamic scholars like Al-Kindi and European thinkers during the Renaissance continued to uphold geocentrism based on philosophical and observational frameworks of their time. However, challenges to the geocentric model emerged with the advent of new observational techniques and scientific inquiry during the Renaissance. Observations by Copernicus and Galileo suggested a different arrangement of celestial bodies, leading to the eventual shift towards the heliocentric model.

b. **Heliocentric Model: Sun-Centered Astronomy**

The heliocentric theory, from the Greek "Helios" (Sun) and "centric" (center), proposes that Earth and other planets orbit the Sun. This transformative model was championed by Nicolaus Copernicus in the 16th century, who posited that Earth's apparent motion could be better explained by its rotation around the Sun rather than being the stationary center of the universe. Copernicus's work, "De Revolutionibus Orbium Coelestium," challenged the geocentric worldview, sparking debates and reshaping astronomical understanding. His ideas, although initially controversial, gained traction with subsequent observations and mathematical validations by Kepler and Newton, leading to widespread acceptance in the scientific community by the 18th century. In the heliocentric model, the Sun is recognized as a star—a ball of glowing gas with immense energy output and a crucial role in the solar system's dynamics. Its diameter exceeds 1.33 million kilometers, dwarfing Earth, and its energy emissions significantly influence planetary climates and environments.

Comparative study of Geocentric and Heliocentric

This table provides an overview of how geocentric and heliocentric views differ in the structure and movement of the solar system in classical cosmological thought.

Table 1. Comparison of Geocentric and Heliocentric Models

Aspect	Geocentric	Heliocentric
Definition	An Astronomical model that places Earth at the center of the universe with planets and the Sun orbiting it.	An Astronomical model that places the Sun at the center of the solar system with planets, including Earth, orbiting it.

Explanation of Retrograde Motion	Planets appear to move backward periodically in the sky due to their eccentric orbits around Earth.	Provides a simpler explanation for planetary motions including retrograde motion, explained as a result of differing orbital speeds of planets around the Sun.
Key Figures	Al-Battani, Al-Faraghni and Al-Sijzi Aristotle, Hipparchus, Ptolemy, Al-Kindi, Anaximander.	Nicolaus Copernicus, Johannes Kepler, Galileo Galilei, Abu Rayhan Al-Biruni, Al-Hazen
Main Theory	Earth is at the center of the universe, the Moon orbits Earth in the closest orbit, and stars are on a large celestial sphere rotating in the farthest orbit.	The Sun is at the center of a system of moving objects, later known as the solar system.
Evolution of Theory	The geocentric theory persisted for thousands of years before being disproven by the heliocentric theory more than fifteen centuries later.	The heliocentric theory replaced the geocentric model and became the foundation of modern astronomy since the 16th century.

Islamic View and Contribution on Astronomy

Astronomy in the Islamic tradition has deeply influenced both scientific thought and cultural development throughout history, particularly during the Islamic Golden Age from the 8th to the 14th century. Muslim scholars made remarkable contributions to astronomy, advancing observational techniques, developing sophisticated instruments like the astrolabe and sextant, and formulating new theories about celestial motions. This era saw the establishment of numerous observatories across the Islamic world, including prominent ones like those in Damascus, Baghdad, and Maragha, which became centers of astronomical study and innovation. The foundation for Islamic astronomy was laid upon the translation and assimilation of knowledge from ancient civilizations such as the Greeks, Persians, Indians, and others. This scholarly endeavor was facilitated by figures like Al-Ma'mun, who established the first observatory in Damascus, and later, the renowned Maragha Observatory built by Nasiruddin al-Tusi. These institutions not only preserved but also enhanced existing astronomical theories, correcting errors and conducting precise observations that contributed to the broader scientific understanding of the universe. The figures in Islamic astronomy include Al-Battani (Albategnius), who made significant advancements in trigonometry and accurately measured the solar year and the Earth's axial tilt. Al-Biruni, another notable scholar, contributed to astronomy by developing precise methods for measuring geographical coordinates using astronomical instruments like the astrolabe. His extensive works spanned astronomy, mathematics, geography, and history, illustrating the interdisciplinary nature of Islamic scholarship during that era.

Ibn al-Haytham (Alhazen) stands out for his groundbreaking work in optics and criticism of the Ptolemaic model of the universe, which significantly influenced both scientific thought and methodology. His "Kitab al-Manazir" (The Book of Optics) laid the groundwork for modern optics and emphasized empirical observation and experimentation, marking a departure from earlier speculative approaches. Furthermore, Al-Khwarizmi, renowned for his

contributions to mathematics and astronomy, notably worked on the measurement of the Earth's circumference, achieving a level of precision that surpassed earlier Greek calculations. His work in trigonometry, algebra, and astronomical calculations formed the basis for later developments in these fields. Islamic astronomy not only advanced scientific knowledge but also had profound cultural implications. It played a crucial role in determining accurate prayer times and the direction of the Qibla, which are fundamental to Islamic religious practice. The separation of astronomy from astrology within Islamic culture underscored a commitment to scientific rigor and empirical observation, distinguishing it from earlier traditions that often intertwined the two.

Modern Islamic scholarship continues to explore the relationship between scientific discoveries and Quranic teachings, seeking harmony between scientific inquiry and religious principles. This ongoing dialogue reflects a deep-seated tradition of inquiry and intellectual curiosity within Islamic thought, aimed at understanding the natural world through observation, calculation, and rational inquiry. Islamic astronomy during the Golden Age represented a pinnacle of scientific achievement, characterized by systematic observation, mathematical precision, and theoretical innovation. Its contributions not only advanced astronomy as a discipline but also laid the groundwork for broader scientific advancements that continue to shape our understanding of the universe today. The legacy of Islamic astronomers remains a testament to the enduring quest for knowledge and the synthesis of diverse intellectual traditions within the Islamic world.

The Quranic signs of the orbits of planets are proven by modern astronomical findings, which state that the orbit of a celestial body, also known as its path or trajectory, is the route traversed by a celestial body around another celestial body, under the influence of certain forces. The orbits of planets are referred to as orbits. Each planet has its orbit/path. This theory was first proposed by Nicolaus Copernicus (1473-1543). He posited that all celestial bodies, including Earth, orbit the Sun in circular orbits. The Quran motivates humanity to study and understand the universe as a form of respect for the greatness of Allah and to gain beneficial knowledge for life. Thus, astronomy in the perspective of the Quran is not only the study of celestial bodies but also a means to draw closer to Allah SWT and to deepen understanding of His greatness.

What does the Quran say about astronomy?

The Quran describes Astronomy to the close relationship between the universe and its Creator, Allah SWT. The Quran affirms that this universe is the work of Allah, full of His power and wisdom. In the Quran, the heavens, the earth, the sun, the moon, and the stars are described as signs of Allah's greatness and as evidence of His existence. The Quran also indicates that this universe is governed by Allah with His precise decrees. Celestial bodies, such as the sun, the moon, and the stars, move according to His will without flaw or error. The Quran also provides guidance on the use of celestial bodies as markers of time, such as deciding the beginning and end of Ramadan. While modern astronomy delves into various celestial objects, the Quran concentrates mainly on the sun, moon, and stars, offering insights into their movements and functions . Interestingly, these Quranic descriptions align remarkably well with contemporary astronomical understanding. The Quran mentions celestial subjects—such as the sun, moon, and stars—each playing significant roles in the universe. The sun is described as a source of light and heat essential for life on Earth, symbolizing divine power and guidance. Its

regularity and reliability in its courses serve as evidence of Allah's control over natural phenomena (e.g., Surah Yasin, 36:38).

The moon is highlighted for its role in measuring time and determining Islamic months and rituals like fasting and Hajj (Surah Yunus, 10:5). It underscores its importance in religious observances and natural cycles.

Stars, referred to as lamps or guides in the night sky, are seen as signs of guidance and navigation for travelers (Surah An-Nahl, 16:16). Their multitude and organization into constellations are depicted as evidence of Allah's vast creative power and wisdom (Surah Al-Mulk, 67:3-4).

These celestial bodies illustrate the Quran's view of the natural world as a reflection of divine order and purpose. There are two controversial astronomical paradigms are geocentric and heliocentric. These paradigms have differing views on the central position within the solar system. Let us delve deeper into the differences and controversies between them.

Interpretation of Geocentric Verses on Al-Kabir by Fakhruddin Al-Razi

Key Verses:

1. Surah Yasin: 38-40

وَالشَّمْسُ تَجْرِيْ لِمُسْتَقَرٍّ لَّهَا ۗذٰلِكَ تَقْدِيْرُ الْعَزِيْزِ الْعَلِيْمِ ۗ – ٣٨
وَالْقَمَرَ قَدَّرْنٰهُ مَنَازِلَ حَتّٰى عَادَ كَالْعُرْجُوْنِ الْقَدِيْمِ ٣٩
لَا الشَّمْسُ يَنْۢبَغِيْ لَهَآ اَنْ تُدْرِكَ الْقَمَرَ وَلَا الَّيْلُ سَابِقُ النَّهَارِ ۗوَكُلٌّ فِيْ فَلَكٍ يَّسْبَحُوْنَ – ٤٠

And the sun runs his course for a period determined for him: that is the decree of (Him), the Exalted in Might, the All-Knowing (38) *And the moon - We have determined for it phases, until it returns [appearing] like the old date stalk.* (39) *It is not permitted to the Sun to catch up the Moon, nor can the Night outstrip the Day: Each (just) swims along in (its own) orbit (according to Law)*(40)

Surah Yasin 38-40: These verses discuss the movements of the sun and moon, emphasizing their distinct paths and roles. Al-Razi offers multiple interpretations of the word "مستقر" (mustaqarr), including its reference to the Day of Judgment, the sun's influence on seasons, and its eventual return to its origin. Al-Razi's Interpretation of Celestial Orbits and Their Significance. Key Aspects of **"لِأَجَلٍ مُسَمًّى":**

- Specific Orbits and Paths: Allah has designated specific orbits for each celestial body, with redetermined paths and varying speeds.
- Non-physical Path: The orbit is not a physical form but the path stars (including the sun) follow.
- Physical Form: Many scientists believe the orbit is a physical form around which stars revolve, aligning closely with the Quran.
- Day and Night: Al-Razi attributes the occurrence of day and night to the sun rotating the earth, which is influenced by its orbit (referred to as the Arsh). Recitation by Ibn Mas'ud and Ibn 'Abbas RA, They recited the verse emphasizing the sun and moon's adherence to calculations set by Allah, highlighting their continuous, precise movements.

2. Al-Anbiya: 33

وهو الذي خلق الليل والنهار والشمس وَالْقَمَرَ كُلٌّ فِي فَلَكٍ يَسْبَحُونَ

"And it is He who created the night and the day and the sun and the moon; all (heavenly bodies) in an orbit are swimming. "

Al-Razi's interpretation emphasizes the critical roles of the sun and the moon in sustaining life and maintaining natural cycles on Earth. He asserts the stillness of the Earth but does not imply that the Earth is the center of the solar system, nor does he suggest that the sun orbits the Earth. Al-Razi explains that the creation of the sun and the moon completes Allah's blessings by enabling day and night and providing heat and cold. Orbital Movement: Both the sun and the moon orbit in their respective paths, playing crucial roles in sustaining life on Earth. The sun governs the day and determines the seasons, while the moon governs the night.

3. An-Nahl: 15

وَأَلْقَىٰ فِي ٱلْأَرْضِ رَوَٰسِيَ أَن تَمِيدَ بِكُمْ وَأَنْهَٰرًا وَسُبُلًا لَّعَلَّكُمْ تَهْتَدُونَ

And He has cast into the earth firmly set mountains, lest it shift with you, and [made] rivers and roads, that you may be guided"

Al-Razi explains that this verse (Surah An-Nahl: 15) indicates that the Earth is static, which aligns with the geocentric theory. In his exegesis, Al-Razi interprets the verse as evidence that Allah has made the mountains as pegs to maintain the stability of the Earth, preventing it from moving. This view supports the geocentric concept, where the Earth is considered the fixed center of the universe, with celestial bodies revolving around it. According to Al-Razi, the stability of the Earth mentioned in this verse reinforces the idea that the Earth does not move, consistent with the dominant astronomical thought of his time. This geocentric perspective is an essential part of traditional interpretation, which sees the Earth as the center of all of Allah's creation, playing a crucial role in maintaining the balance of the universe.

Characteristics of the Earth (According to Al-Razi):

- Earth's Stillness: Al-Razi argues that the Earth is stationary and does not move, whether rotating or revolving. His reasoning includes:
- Inhabitable Earth: If the Earth moved, it would be uninhabitable. People and objects would not stay on the surface due to the Earth's faster movement. This is reffering to geocentric model.
- Travel Impossibility: Human travel would be impossible if the Earth rotated, as the Earth's movement would outpace human motion, It reffered to geocentric model.
- Shape of the Earth: Al-Razi describes the Earth as half-spherical with a curved top and flat bottom, with water and air beneath the arch, contributing to its stillness.

Geocentric Verses Interpretation by Various Scholars

1. Jalaluddin Al-Mahali and Jalaluddin As-Suyuthi

Jalalayn on their tafsir said: And He has firmly set mountains on the earth to **انَ ا**" do not" **تَمِيدَ** "*the earth may shake*" **بِكُمْ** *"Move with you*" He has Created **وَأَنْهَٰرًا** "Rivers" like Nil River, and وَسُبُلًا "*paths to be traveled.* "*So that you may receive guidance.*" "*to reach your destinations*." In the Tafsir Jalalain it is said that the sun and moon move like someone swimming, and Abdullah bin Abbas said that the sun and moon also move like a weaving circulating in its spinning tool, then this approach aligns with the geocentric theory stating that the sun revolves in its orbit and does not remain stationary as stated by Nicolaus Copernicus in his heliocentric theory. Then the next evidence is the proof of the sun's rotation, from the hadith of the Prophet Muhammad (peace be upon him) who said, "Indeed,

the sun has never been held back for any person, except for the Prophet Yusha bin nun on the day he traveled towards Baitul Maqdis.

2. Al-Kindi

Al-Kindi argued in his book Al-*Manazhir Al-Falakiyyah*, that the Earth is the center of the universe, stationary in nature, unmoving, and not rotating. This is because the Earth consists of elements with varying weights such as earth, water, air, and fire, causing the Earth to be spherical in shape, solidify, and eventually have weight

Interpretation of Heliocentric Verses According to Al-Maraghi

1. Surah Yasin verse 38

وَالشَّمْسُ تَجْرِيْ لِمُسْتَقَرٍّ لَّهَا ۗذٰلِكَ تَقْدِيْرُ الْعَزِيْزِ الْعَلِيْمِ ۗ – ٣٨

"And the sun runs his course for a period determined for him: that is the decree of (Him), the Exalted in Might, the All-Knowing."

Al-Maraghi interprets the word "li mustaqarrin" (**لِمُسْتَقَرٍّ**) in this verse as referring to the sun's orbit around its place of dwelling, indicating a heliocentric perspective where the sun moves within its own determined course.

2. Surah An-Naml 88

وَتَرَى ٱلْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ ٱلسَّحَابِۚ صُنْعَ ٱللَّهِ ٱلَّذِيٓ أَتْقَنَ كُلَّ شَيْءٍۚ إِنَّهُۥ خَبِيرُۢ بِمَا تَفْعَلُونَ

"And you see the mountains, thinking them motionless, while they will pass as the passing of clouds. [It is] the work of Allah, who perfected all things. Indeed, He is Acquainted with that which you do."

Al-Maraghi interprets it as "around the dwelling place of the sun." Al-Maraghi states, "Indeed, it is amazing, O noble readers of the Noble Qur'an. Why is it that the Qur'an has indeed established something that is later proven true by modern discoveries (Heliocentrism)? Al-Maraghi, in his book, argues that the sun revolves at a speed of approximately 200 miles per second. Thus, the sun is one of the millions of stars that make up this universe, and it has been proven that the universe or the star system revolves around its center. The understanding of scientists about the words of a body performing a rotational motion is that these words mean a fixed axis around which the rotation revolves. Or it means the center of the circle of this motion. In the first sense, it means the line stretching between the two poles of the sun. While in the second sense, it means the center of the solar system, where all the stars revolve around the sun. In the interpretation of this verse, mountains that appear static or immobile are moving like passing clouds. This suggests that there is movement not visible to the naked eye. Here are the exact points of this verse:

Earth's Movement: In the heliocentric model, the Earth is not static; it rotates on its axis and orbits the sun. This verse can be interpreted as indicating that even though the mountains appear stationary, they are moving with the Earth's rotation and revolution.

Illusion of Stasis: Just as mountains seem immobile but are actually in motion, the Earth itself appears unmoving from the perspective of someone standing on it, yet it is moving at high speed through space.

The Majesty of Allah's Creation: This verse emphasizes the greatness and perfection of Allah's creation, which includes organizing such complex and orderly movements in the universe. This aligns with the modern understanding of the movement of planets and other celestial bodies.

This verse is used by Al-Maraghi to illustrate the precision and perfection of Allah's creation. The movement of mountains, perceived as still, is compared to the movement of clouds, which subtly implies the Earth's rotation and the dynamic nature of the planet within the heliocentric model.

Al-Maraghi's interpretation of Q.S. Al-Naml verse 88 and Abdul Hamid's correspondence highlight the dynamic nature of the Earth's and sun's movements, supporting the heliocentric model. The continual changes in day and night, the sun's rotation and movement within the star system, and the apparent motion of the sun from Earth's perspective all point to a sophisticated understanding of celestial mechanics. Abdul Hamid's Letter to Al-Maraghi:

1. First Evidence: Change of Day and Night. The continual change of day and night is a manifestation of Allah's power and a significant astronomical phenomenon for all living beings on Earth. This demonstrates the greatness of the Creator.
2. Second Evidence: The Absolute Motion of the Sun
   - The sun's apparent annual cycle among the stars is due to the Earth's revolution around the sun. Recent findings show the sun's essential movements:
   - Axis Rotation: The sun rotates on its axis approximately every 26 days, as observed by sunspots.
   - Movement in the Universe: The sun, along with its planets, revolves around the center of the star system at about 200 miles per second. This means the sun is not fixed but has a circular motion.
   - The term "li mustaqarrin" in Surah Yasin verse 38 can mean a fixed axis or the center of the star system's movement, supporting the heliocentric model.
3. Third Evidence: The Sun's Pseudo Motion. The sun appears to move around the Earth due to the Earth's revolution around the sun. This is similar to how stationary objects appear to move to train passengers. This apparent motion reinforces the understanding that the Earth revolves around the sun in a vast orbit.

Indications of Heliocentrism in Qur'anic Exegesis: An Analysis of Interpretations by Several Commentators

1. Ibn Kathir:

   فَلَكٍ (Orbit): Both the sun and the moon orbit in their respective paths. Ibn Kathir explains that this means all heavenly bodies, including night and day, rotate in a manner akin to a spinning wheel. **وَاخْتِلَافِ اللَّيْلِ وَالنَّهَارِ** or Night and Day: Ibn Kathir notes that the succession of night and day happens without delay, with each following the other continuously.
2. Imam at-Thabari

   Imam At-Thabari explains that the Sun moves in its fixed orbit, meaning the Sun orbits around its axis of rotation, following its astronomical rules, i.e., the Sun rotates around itself. Therefore, the Prophet once explained in a Hadith narrated by Abu Dharr al-Ghifari:

عَنْ أَبِي ذَرٍّ قَالَ دَخَلْتُ الْمَسْجِدَ وَرَسُولُ اللَّهِ جَالِسٌ فَلَمَّا غَرَبَتْ الشَّمْسُ قَالَ يَا أَبَا ذَرٍّ هَلْ تَدْرِي أَيْنَ تَذْهَبُ هَذِهِ قَالَ قُلْتُ اللَّهُ وَرَسُولُهُ أَعْلَمُ قَالَ فَإِنَّهَا تَذْهَبُ تَسْتَأْذِنُ فِي السُّجُودِ فَيُؤْذَنُ لَهَا وَكَأَنَّهَا قَدْ قِيلَ لَهَا ارْجِعِي مِنْ حَيْثُ جِئْتِ فَتَطْلُعُ مِنْ مَغْرِبِهَا مُسْتَقَرٌّ لَهَا (رواه البخاري) ثُمَّ قَرَأَ ذَلِكَ

From Abi Dzar, he said: "One day I was sitting with the Messenger of Allah (peace be upon him) in the mosque. When the sun had set, the Messenger of Allah said: 'O Abi Dzar, do you know where the sun goes?' I replied: 'Allah and His Messenger know best.' The Messenger of Allah said: 'Indeed, the sun disappears and prostrates under the Throne of its Lord, then it seeks permission to return, and it is granted permission to return. It is as if it is said to it, 'Return from where you came,' then the sun returns from its place, and that is its orbit.' (Narrated by al-Bukhari)

3. Ṭanṭāwi Jauharī, in his commentary book "al-Jawāhir fī Tafsīr al-Qur`ān al-Karīm," discusses the Earth's rotation by referring to Surah al-Zumar, verse 5 of the Qur'an, which reads:

خَلَقَ ٱلسَّمَٰوَٰتِ وَٱلۡأَرۡضَ بِٱلۡحَقِّۖ يُكَوِّرُ ٱلَّيۡلَ عَلَى ٱلنَّهَارِ وَيُكَوِّرُ ٱلنَّهَارَ عَلَى ٱلَّيۡلِۖ وَسَخَّرَ ٱلشَّمۡسَ وَٱلۡقَمَرَۖ كُلّٞ يَجۡرِي لِأَجَلٖ مُّسَمّٗىۗ أَلَا هُوَ ٱلۡعَزِيزُ ٱلۡغَفَّٰرُ

"He created the heavens and earth in truth. He wraps the night over the day and wraps the day over the night and has subjected the sun and the moon, each running [its course] for a specified term. Unquestionably, He is the Exalted in Might, the Perpetual Forgiver."

Ṭanṭāwi interprets "**يُكَوِّرُ**" as "rolling up" or "wrapping," similar to wrapping a turban, where the exposed part represents daylight and the covered part represents nighttime. This suggests the rotation of the Earth, where day and night are interconnected as the Earth rotates, causing darkness to disappear with the arrival of daylight and vice versa.

4. Tafsir al-Azhar by Hamka: Hamka explains surah Yasin verse 38 that Allah has anchored this earth with mountains so that it does not shake and lose its balance. A mountainless earth is like a boat or ship sailing on the sea without cargo or with light cargo. If hit by waves, it will easily shake. It's a different story when it's loaded with heavy cargo; the boat or ship will no longer shake easily. It will be calm and balanced in its journey. Calmness does not mean stillness, but rather moving in balance. If you say that you put heavy cargo on a ship to prevent it from shaking and the ship still moves or sails, then your statement is correct. Similarly, Allah placed mountains on the Earth as its pegs to prevent it from shaking or trembling. This does not negate the fact that the earth moves and rotates. So, according to the correct opinion, all planets rotate and move.
5. Consensus(Ijma):
    - Celestial Motion: There's a consensus among early companions (Ibn Abbas, Ikrimah, Ad-Dahhak, Al-Hasan, Qatadah, Ata Al-Khurasani) that the sun and moon rotate in fixed orbits similar to a spinning wheel.

What are Muslim scholars' (Ulema) views on geocentric and heliocentric models?

Scholars have differing views on heliocentric and geocentric theories. Historically, debates on these theories became prominent with figures like Nicolaus Copernicus, who proposed heliocentrism, and Galileo Galilei, who opposed religious authorities through his writings. In contemporary times, Islamic scholars also have varied opinions. The Permanent Committee for Scholarly Research and Ifta supports geocentrism, as stated in fatwa no. 18647, 9247, and 15255, and obliges the rejection of heliocentrism, arguing it is just a theory and conflicts with Quranic texts.

According to Sheikh bin Baz Rahimahulla:

Both heliocentric and geocentric theories are interpretations based on Quranic evidence (Ijtihad). Geocentrism is considered more accurate by some scholars due to its alignment with the Quranic text. For instance, Allah's words in Surah Ya-Sin: 38 state: "The sun runs on its fixed course." Sheikh bin Baz explained that the Quran, Sunnah, scholarly consensus, and observable reality indicate that the sun revolves in its orbit, while the Earth remains stationary, stabilized by mountains as a dwelling place.

Sheikh Al-Uthaimin Rahimahulla:

He issued a fatwa supporting the idea that the sun moves around the Earth, leading to the alternation of day and night. He emphasized adherence to the apparent meanings of the Quran and Sunnah. He suggested two approaches for unclear matters that do not affect faith: returning knowledge to Allah and considering disagreements superficial without taking them too seriously.

Sheikh Al-Albani:

Sheikh Al-Albani favored heliocentrism, aligning it with empirical research findings. He responded to the interpretation of Surah Ya-Sin, verse 38, noting that Allah mentions signs of His power regarding the earth, sun, and moon. In Surah Ya-Sin: 40, Allah states, "And all of them orbit in the universe." Sheikh Al-Albani concluded that "all" refers to the earth, sun, and moon, indicating their rotation.

How Should Muslims Approach the Debate on Heliocentric and Geocentric Theories?

As Muslims, our attitude towards the debate on heliocentric and geocentric theories must be wise and balanced. It is important to remember that the Quran and Sunnah will never contradict reality. Although not all aspects of reality are mentioned in the Quran and Sunnah, particularly those related to natural phenomena, the Quran and Sunnah are not biology textbooks or references for natural sciences.

The primary purpose of Allah mentioning the universe in the Quran is to encourage humans to glorify Him. Allah says before mentioning the creation of the universe:

آيَةٌ لَّهُمْ "A sign (of Allah's power) for them..."

This indicates that references to the universe are meant as signs that lead us to a greater appreciation of Allah's greatness and power. Allah also teaches in the Quran that unresolved disputes should not be taken too seriously, especially for issues that do not enhance one's faith. Disagreements regarding heliocentric or geocentric theories are unavoidable. However, we should regard them as superficial differences, not sources of sharp and divisive debates.

The differing views among scholars, such as Sheikh bin Baz Rahimahulla supporting geocentrism based on Quranic interpretation and Sheikh Al-Albani favoring heliocentrism based on empirical findings and a more inclusive interpretation of the same verses, show that these differences should not be causes of division. As Muslims, we must understand that the primary purpose of the Quran is to guide us towards a deeper recognition of Allah's power and to encourage unity and humility among Muslims, even when faced with different interpretations of the natural world. What is more important is to strengthen our faith and obedience to Allah, rather than getting caught up in debates that do not enhance our faith.

CONCLUSION

This study highlights that the Qur'an, as a timeless and universal scripture, provides space for scientific reflection, including in the field of astronomy. Through an analysis of verses related to celestial bodies and the interpretations of scholars such as Fakhruddin Al-Razi and Musthafa Al-Maraghi, it was found that the Qur'an does not explicitly endorse either the geocentric or heliocentric model. Instead, it offers guidance that is open to evolving scientific interpretations over time. Geocentric interpretations are predominantly found among classical scholars and were influenced by the scientific knowledge available during their respective eras. In contrast, heliocentric interpretations have gained ground in modern exegesis, supported by contemporary astronomical advancements. These differing perspectives reflect the dynamic interplay between revelation and reason in Islamic intellectual tradition. Therefore, this study emphasizes that the Qur'an encourages human beings to contemplate and investigate the creations of Allah, serving as a bridge between religious teachings and modern science. The divergence in interpretations regarding cosmological models should not be a source of division, but rather a field for intellectual ijtihad that enriches Islamic scholarship. A wise and open-minded approach to such differences is essential in strengthening both faith and scientific inquiry among Muslims in the modern era.

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