
AL-QUR'AN AND ASTROPHYSICS

Gagah Daruhadi

Institut PTIQ Jakarta, Indonesia

Email: gagah_d@yahoo.com

Abstract

The Quran, as the holy book of Muslims, has long been studied not only in religious and moral contexts, but also in scientific contexts. This study focuses on the excavation and analysis of Qur'anic verses related to astrophysical concepts, taking into account historical context and traditional interpretation. This research seeks to provide a deeper understanding of how religious texts can interact with scientific knowledge, enriching the dialogue between science and religion, and expanding the understanding of the Islamic worldview in the context of modern science. The findings include some of the relevance of Quranic verses to modern astronomy concepts, such as the expansion of the universe, the structure of galaxies, and the orbit of celestial bodies. In addition, this study emphasizes the importance of considering historical, cultural, and linguistic contexts in the interpretation of religious texts.

Keywords: Al-Quran, Astrophysics, Science, Divine Revelation, Universe

INTRODUCTION

Discussing the relationship between the Qur'an and astrophysics, the background of this study focuses on the excavation and analysis of Qur'anic verses related to astrophysical concepts. The Quran, as the holy book of Muslims, has long been studied not only in religious and moral contexts, but also in scientific contexts. With the advancement of modern science, especially in the field of astrophysics, there has emerged a growing interest in exploring how these ancient texts might reflect an understanding or intuition of the phenomena of the universe (T. Jamaluddin, 2018).

This study considers how Quranic verses are interpreted in the context of modern astrophysics, including the Big Bang theory, the expansion of the universe, the structure of galaxies, and other aspects of astronomy research. The main question underlying this study is whether such interpretations have a strong scientific basis, and how such interpretations are accepted in the scientific and religious communities (Thomas Jamaluddin, 2018).

The main purpose of this study is to explore and analyze how the verses of the Quran can be connected to the principles of astrophysics. This includes, identifying and understanding the verses of the Quran that are considered related to the concept of astrophysics. Analyze the scientific interpretation of these verses and examine their relevance to modern astrophysical knowledge. Assess the views and reactions of the scientific and religious communities to such interpretations.

The benefits of this research include providing a deeper understanding of how religious texts can interact with scientific knowledge, enriching the dialogue between science and religion, and expanding the understanding of the Islamic worldview in the context of modern science.

RESEARCH METHOD

This research uses a multidisciplinary approach, combining library research methods, religious texts, scientific analysis, and descriptive qualitative research (Moleong, 2013). Meanwhile, library research, which is research that uses library materials related to the

discussion in this study, both primary, secondary and tertiary materials and materials that can support this research (Hamzah, 2019).

Primary data sources, namely data sources obtained directly from the first/original source obtained directly to the researcher without going through intermediaries, and 80% are scientific journals from all bibliographies that have been published in the last 10 years, the other 20% can include articles or research reports (theses, books and other related publications) (Darwis, 2021). Secondary data sources, are data sources obtained by researchers indirectly from the original source, obtained through intermediaries of other people or other documents (Suggestion, 2021). The secondary data that became this study was divided into two, namely: magazines, newspapers, TV, internet, Youtube, other electronic media. Data sources come from documents that can complement primary and secondary data, such as: dictionaries, encyclopedias, and cumulative indexes (Hamzah, 2019). Apart from some of the literature mentioned above, as support, researchers also refer to various scientific articles, official documents and the internet.

Data collection is an effort made to collect or collect various kinds of information that is relevant and related to the topic or problem that will be or is being researched (Hardani, 2020). Meanwhile, the data collection technique carried out by the researcher in this study is a documentation study. Documentation study is one of the methods of collecting and collecting data by recording and analyzing existing documents to obtain an overview or viewpoint of these documents (Hardani, 2020). The main steps include a literature review, namely conducting a comprehensive review of relevant literature, including religious texts, Quranic interpretations, and astrophysical literature.

Text Analysis is identifying and analyzing Qur'anic verses related to astrophysics, taking into account historical context and traditional interpretation. Conveying the opinions of experts in the field of Qur'anic Interpretation and astrophysics to get diverse perspectives.

Analysis and Interpretation is to review the data collected and interpret the findings in the context of science-religion studies. Using this methodology, the research seeks to provide an objective and informed analysis of this inherently interdisciplinary topic.

RESULT AND DISCUSSION

The Concept of Astrophysics in a Scientific Context

Introduction to Astrophysics

Astrophysics is a branch of astronomy that focuses on the study of the physics of the universe, including the properties, behaviors, and interactions of celestial bodies. It includes research on stars, galaxies, black holes, nebulae, and other phenomena in the universe.

One of the main goals of astrophysics is to understand how the universe works at a fundamental level, from the laws of physics that govern the movement of stars and galaxies to processes such as star formation and galaxy evolution.

Modern technology, such as space telescopes and particle detectors, has allowed astrophysicists to study very distant objects and phenomena, providing new insights into the origin and evolution of the universe.

To know how the universe in the movement of stars and galaxies develops, we cannot make measurements in the laboratory on earth, and in fact it is the universe that is the laboratory of Astrophysics. There are two things that we can observe in celestial bodies, namely their electromagnetic radiation, both in visible waves, radio, X-rays, gamma rays, and others, as well as in their motion (Estimate, 2010).

Science The basic laws in astrophysics are the basic laws of physics that concern radiation and gravitational motion, as well as the physical magnitude of the star.

The Law of Radiation in question is the law of physics that is related to the law of Radiation is the Law of Radiation which among others is the Emitter of Black Matter, the Law of Flank Radiation

While the Law of Gravity includes Newton's Law of Gravity, Objects that move in a circle (e.g. the Orbit of the Moon), Kepler's Laws, Laws concerning planetary speed, Laws, the Law of Conservation of Energy, and to learn the essence of physical magnitude, it is necessary to key dimensions such as the physical magnitude of Stars (sun, earth, other stellar dimensions), distance, time, radius, and luminaires of the energy emitted.

The physical quantities in question include the magnitude of the Milky Way, the distance of the Earth, the period of the sun, the luminosity of the sun, the radius of the sun, the temperature of the sun, and other physical quantities of the stars, their chemical composition, their magnetic fields, such as Kirchoff's Law, the hydrogen spectrum, the model of the Drill Atom, the classification of the star spectrum, the Dopler effect, the photometry of stars, the type of star, the spectral of the star particulars, the evolution of stars The process of the formation and development of stars, And this process takes place in millions or even billions of years.

For this it is necessary to build a theory that studies in the order of age and stages of the evolution of stars. Thus, to be more convincing, the theory must be checked by observation and vice versa, the results of the observation must be theoretically evaluated. Cooperation between theory and observation is necessary before people can truly understand the universe and its development.

The Big Bang Theory and the Expansion of the Universe

The Big Bang theory is one of the most fundamental concepts in astrophysics, explaining the origin of the universe. According to this theory, the universe began as a very small and hot point that exploded or expanded about 13,8 billion years ago. Evidence for this theory includes the observation that galaxies are constantly moving away from each other, a phenomenon known as the expansion of the universe. Cosmic microwave background radiation is also a residual heat from this early explosion, providing strong evidence in support of the Big Bang theory. This concept is essential for understanding the structure and evolution of the universe.

What Georges Lemaître thinks about the Big Bang

The Big Bang theory was first proposed by Abbe Georges Lemaitre, a cosmologist from Belgium in the 1920s. Abbe Georges Lemaitre argues that the universe originally originated from a mass of superatoms in the form of small fireballs. The clumps over a long period of time are getting more and more compacted and heated. Then there was a bang that spewed out the entire universe. The energy produced by the Big Bang is so great that it then forms all the matter of the universe and will then continue to develop.

Hydrogen atoms are also formed at the same time when the energy from Big Bang extends out. These hydrogen atoms continue to grow and gather to form dust and hydrogen clouds commonly referred to as nebulae. Hydrogen clouds with very high temperatures are the material that forms stars in the universe. After the formation of many stars, then the stars gather to form a group that is then called a galaxy. From these galaxies, there are billions of solar systems, including the solar system, including the earth that we live on today (Leighton, 2023).

Based on the best measurements of 2009, the initial state of the universe began about 13.7 billion years ago (Menegoni et al, 2009), which then always becomes a reference as the time of occurrence Big Bang aforementioned (Jonathan Keohane, 1997). This theory has provided the most comprehensive and accurate explanation supported byScientific method

along with observations (Feuerbacher & Scranton, 2009). The devastating explosion equation is formulated by Alexander Friedmann. After Edwin Hubble in 1929, it was discovered that the distance between the Earth and galaxy which is very far is generally directly proportional to red friction, as Lemaître described in 1927, this observation is thought to indicate that all very distant galaxies and star clusters have velocities that directly move away from our point of view: the farther away, the faster the speed seems to be (Bird, 2018). If the distances between galaxy clusters continue to increase as we see now, they must have been close together in the past.

Astronomers estimate that there are around a hundred billion galaxies, each containing about a hundred billion stars. The nearest galaxy to the Milky Way, Andromeda, is two million light-years away, meaning we see it as it was two million years ago. In 1929, American astronomers discovered that galaxies are moving away from us, with the farthest moving the fastest, leading to the theory that all galaxies were once together, marking the Big Bang. This discovery, encapsulated in Hubble-Lemaître's laws, suggests the universe expands and contracts in a cyclical process, continuously repeating without a definitive end.

Some Theories of the Formation of the Universe Through a research process with reasonable and scientific evidence, it is believed that the theory of *Big Bang* is the correct theory to date. In addition to the Big Bang Theory, there are several theories about the formation of the universe, including Steady state theory, Expansion and Compression theory, Quantum Private Nature theory, Oscillating theory, Nebula theory or Fog theory and others (Ahmad, 2023).

Evidence of the Truth of the Big Bang Theory, including 1) Evidence of Hubble Law Observation and monitoring through the First Hubble binoculars of a galaxy development center. 2) Microwave Cosmos as a Radiation Background 3) Abundance of Primordial Elements, the concentration of which is comparable to the Amount of Hydrogen i.e. Helium Lithium, 4) Arno Penzias and Robert Wilson in 1965, admitting to having discovered the fundamental radiation wave of the Big Bang microcosmic wave (receiving the Nobel Prize)

What happened to the universe before it happened *Big Bang*? Is it true that there was only space dust in the universe at that time Stephen Hawking, a famous physicist from the United Kingdom that the events before *Big Bang* cannot be definitively defined (Muhida, n.d.).

Al Qur'an explained the forming of sky and land through Al-Anbiya': 30, Hud: 7, Adz-Dzarajat: 47,48, Al-Ghasiyah: 17-18, Ar-Rahman: 37-38, and Fussilat: 9,11

Theory Big Bang

The *Big Bang* theory was first proposed by Abbe Georges Lemaitre, a cosmologist from Belgium in the 1920s. Abbe Georges Lemaitre argues that the universe originally originated from a superatom (Ancient Atom) in the form of a small fireball. The clumps over a long period of time are getting more and more compacted and heated.

Then there was a bang that spewed out the entire universe. The energy produced by the *Big Bang* is so large that it then forms all the matter of the universe and will then continue to expand

Galaxies and Solar System

Hydrogen atoms also form at the same time as the energy from the *Big Bang* expands outwards. These hydrogen atoms continue to grow and gather to form dust and hydrogen clouds commonly referred to as nebulae. The hydrogen cloud will continue to grow denser with temperatures rising to millions of degrees Celsius

These clouds are the material that forms the stars in the universe. After the formation of many stars, then the stars gather to form a group that is then called a galaxy. From these

galaxies, there are billions of solar systems, including the solar system, including the earth that we live in today.

Based on the best measurements of 2009, the initial state of the universe began about 13.7 billion years ago, which has always been a reference to the time of the Big Bang. This theory has provided the most comprehensive and accurate explanation supported by scientific methods and observations

Expanding – Hubble-Lemaître Law

In 1922, Alexander Friedmann's equation suggested that the universe might be expanding, challenging Einstein's static model of the universe. Edwin Hubble, starting in 1924, developed methods to estimate distances between galaxies using the Hooker Telescope and, by 1929, discovered a correlation between a galaxy's distance and its redshift, now known as Hubble's Law. This observation, initially described by Lemaître in 1927, indicated that distant galaxies and star clusters are moving away from us, with those farther away receding faster. This led to the idea that if the distances between galaxies are increasing, they must have been much closer together in the past, supporting the concept of an expanding universe.

In 1931, Lemaître further proposed that the universe's expansion implies it must have originated from a single point, the "primordial atom," marking the beginning of time and space. This idea aligns with the Big Bang theory, which suggests that the universe undergoes a continuous cycle of expansion and contraction. The Hubble-Lemaître laws, including the Hubble constant (H_0), describe the rate of this expansion. With roughly one hundred billion galaxies, each containing about one hundred billion stars, and the closest galaxy, Andromeda, being two million light-years away, these discoveries underscore the vast and dynamic nature of the universe, revealing its past and ongoing evolution.

Scientific Theory of the Universe Other Than the Big Bang.

Some Theories of the Formation of the Universe Through a research process with reasonable and scientific evidence, it is believed that the Big Bang theory is the correct theory until now. In addition to the Big Bang Theory, there are several theories about the formation of the universe, including Steady state theory, Expansion and Compression Theory, Quantum Private Nature Theory, Oscillating Theory, Nebula Theory or Fog theory and others.

The Theory of the Formation of the Meta Nature

Many scientists have debated the existence of the universe from where the universe exists, when did the universe exist, how was the universe created? In addition to the Big Bang Theory, there are several theories about the formation of the Universe, including Steady state theory, Expansion-Compression Theory, Quantum Theory, Oscillating Theory, Nebula Theory or Fog theory and others. Through a research process with reasonable and scientific evidence, it is believed that the Big Bang theory is a correct theory to date compared to other theories.

Proof of the Truth of the Big Bang Theory

Evidence of Hubble Law Observations monitored through the binoculars of Hubble, a center for galaxy development at NASA, as scientific evidence that the universe expands in all directions, which is proof of the truth of the Big Bang Theory. Microwave Cosmos As A Radiation Background. Abundance of Primordial Elements, concentration proportional to the Amount of Hydrogen i.e. Helium Lithium. Arno Penzias and Robert Wilson in 1965, admitted to having discovered the fundamental radiation wave of the Big Bang microcosmic wave (receiving the Nobel Prize).

Georges Lemaitre's conclusion of the opinion about the big bang

Of the opinions of several experts who have found theories on the formation of the universe, the Big Bang theory is scientifically the most convincing, both in terms of science and observation with modern equipment. The creation of the Universe that is related to the Big Bang theory has been explained in the Qur'an verse 1400 years before the Bibang theory appeared.



The Big Bang Theory image starts from time begins, from the existence of energy and space and time, stages 1 to the present day of the Creation of the Universe are formed.

Orbit of Celestial Bodies and Solar Systems

Astrophysics also studies how celestial bodies, such as planets, stars, and satellites, move and interact. Newton's laws of gravity and Kepler's laws of motion play an important role in understanding the orbits of these objects. For example, in our solar system, the planets orbit the sun in a specific trajectory, influenced by their mass and the sun's gravitational pull. Research on this orbit is not only important for understanding our own solar system, but also for detecting and understanding planets outside the solar system (exoplanets).

Atmosphere and Protection of Life on Earth

Astrophysics also includes the study of the atmosphere and how it protects life on earth. The earth's atmosphere acts as a shield that protects us from harmful radiation from the sun and space, as well as helping to regulate the planet's temperature. Phenomena such as the greenhouse effect, which occurs when certain gases in the atmosphere retain heat, are essential for keeping the earth warm and able to support life. In addition, the study of the atmosphere is also important in research into the possibility of life on other planets, where the composition and characteristics of the atmosphere could provide clues about surface conditions and potential habitability.

Understanding these astrophysical concepts provides a scientific basis for exploring and assessing the relationship between the verses of the Quran and the phenomena of the universe described in astrophysics.

Al-Quran and References to Cosmic Phenomena

Expansion of the Universe in the Quran

In the Quran, there are verses that are often associated with the concept of the expansion of the universe in astrophysics. Surah Adh-Dharyat (51:47) states that Allah expands the universe. Some interpreters and scientists associate this verse with the theory of the expansion of the universe which is an important part of the Big Bang theory. According to this theory, the universe has been expanding since the beginning of its formation. This interpretation is interesting because it shows a fit between ancient texts and modern scientific understanding, although this interpretation is still the subject of debate among scholars.

It is affirmed in Surah Adh-Dharyat /51:47 as follows,

وَالسَّمَاءَ بَنَيْنَاهَا بِأَيْدٍ وَإِنَّا لَمُوسِعُونَ

“The Heavens We built with Our hands (Our strength) and indeed We really expanded.” (Adh-Dharyat /51:47)

The Creation of the Universe and the Big Bang Theory

The verse that is often associated with the Big Bang theory in the Quran is Surah Al-Anbiya (21:30). This verse mentions that the heavens and the earth were originally one before being separated by God. This is interpreted by some as a reference to the early moments of the creation of the universe, where matter and energy initially came together before 'splitting' and forming the current structure of the universe. This kind of interpretation is interesting because it tries to bridge religious texts and modern scientific theories, although it still requires a careful approach to avoid conclusions that are too literal.

It is affirmed in Surah Al-Anbiya /21:30 as follows

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا ۖ وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ

“And do the disbelievers not know that the heavens and the earth were once a solid thing, and then We separated them? And out of the water We made everything alive. So why do they not have faith?” (Al-Anbiya /21:30)

Description of Orbit in the Quran

The Quran also contains verses that talk about the movement of celestial bodies. Surah Ya-Sin (36:40) mentions that the sun and moon move in a specified orbit. Modern interpretations of this verse often associate it with astrophysical understanding of the orbits of celestial bodies. This shows the recognition of system and order in the movement of celestial bodies, a concept that is now understood in detail in astronomy.

It is affirmed in Surah Ya-Sin /36:40 as follows

لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَلَا اللَّيْلُ سَابِقُ النَّهَارِ ۚ وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ

“It is impossible for the sun to chase the moon and night cannot precede the day. Each of them circulates in its circulation line.” (Yasin /36:40).

The Concept of Water as the Origin of Life

The Quran mentions in Surah Al-Anbiya (21:30) that all living things are made of water. In the context of astrophysics and astrobiology, water is recognized as an essential component for life. The search for life beyond Earth is often focused on the search for water, as water is an important medium for the chemical reactions that support life. The relationship between this verse and the modern scientific understanding of the importance of water in biology is another example of an attempt to find parallels between religious texts and science.

The discussion in this chapter explores the relationship between the text of the Qur'an and some of the main concepts in astrophysics, showing how certain verses can be interpreted in a modern scientific context. However, it is important to remember that this kind of interpretation is often metaphorical and symbolic, and must be handled with care to avoid misinterpretation.

It is affirmed in Surah Al-Anbiya /21:30 as follows

وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ

"And out of the water We made everything alive. So why do they not have faith?" (al-Anbiya' /21:30)

Concept of the Universe

Creation of Heaven and Earth According to the Qur'an

The Qur'an explains the process of the creation of Heaven and Earth, Surah Al-Anbiya' /21:30 as follows,

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ

"Do the disbelievers not know that the heavens and the earth, the two, were first united, and then We separated them and We made all living things out of water? So, don't they believe?" (Anbiya' /21:30).

It is explained in Surah Hud/11:7 as follows:

وَهُوَ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ فِي سِتَّةِ أَيَّامٍ وَكَانَ عَرْشُهُ عَلَى الْمَاءِ لِيَبْلُوَكُمْ أَيُّكُمْ أَحْسَنُ عَمَلًا وَلَئِنْ قُلْتُمْ إِنَّكُمْ مَعْبُودُونَ مِنْ بَعْدِ الْمَوْتِ لَيَقُولَنَّ الَّذِينَ كَفَرُوا إِنْ هَذَا إِلَّا سِحْرٌ مُبِينٌ

"And He is the One who created the heavens and the earth in six times, and is His throne (before) on the waters, that He may test which of you is better in deeds, and if you say (to the inhabitants of Mecca): 'Indeed, you will be raised from the dead', the disbelievers will surely say, 'This is nothing but real magic'" (Hud/11:7).

And other letters related to the Creation of the Universe are: Al-Ghasyiyah / 88: 17-18, Ar-Rahman / 55: 37-38, Fussilat / 41: 9,10,11,12

It is affirmed in Al-Ghasyiyah/88: 17-18,19,20, as follows:

أَفَلَا يَنْظُرُونَ إِلَى الْإِبِلِ كَيْفَ خُلِقَتْ ۖ ١٧ وَإِلَى السَّمَاءِ كَيْفَ رُفِعَتْ ۖ ١٨ وَإِلَى الْجِبَالِ كَيْفَ نُصِبَتْ ۖ ١٩ وَإِلَى الْأَرْضِ كَيْفَ سُطِحَتْ ۖ ٢٠

"So do they not pay attention to the camel, how it was created, and the heavens, how is it lifted up, and the mountains, how is it erected? And the earth, how is it leveled?" (Al-Ghasyiyah/88: 17-18,19,20)

It is stated in Surah Ar-Rahman /55: 37, as follows

فَإِذَا انشَقَّتِ السَّمَاءُ فَكَانَتْ وَرْدَةً كَالدِّهَانِ

So, when the heavens are parted, and they become rose-red like oil, there will be great horror. (Ar-Rahman /55: 37).

It is stated in Surah Fussilat /41: 9,10,11,12, as follows:

قُلْ أَنْتُمْ لَتَكْفُرُونَ بِالَّذِي خَلَقَ الْأَرْضَ فِي يَوْمَيْنِ وَتَجْعَلُونَ لَهُ أَنْدَادًا ذَلِكَ رَبُّ الْعَالَمِينَ ٩
وَجَعَلَ فِيهَا رَوَاسِيَ مِنْ فَوْقِهَا وَبَارَكَ فِيهَا وَقَدَّرَ فِيهَا أَقْوَاتَهَا فِي أَرْبَعَةِ أَيَّامٍ سَوَاءً لِلنَّاسِ لِيَوْمٍ ١٠
ثُمَّ اسْتَوَى إِلَى السَّمَاءِ وَهِيَ دُخَانٌ فَقَالَ لَهَا وَلِلْأَرْضِ ائْتِيَا طَوْعًا أَوْ كَرْهًا قَالَتَا أَتَيْنَا طَائِعِينَ ١١
فَقَضَاهُنَّ سَبْعَ سَمَاوَاتٍ فِي يَوْمَيْنِ وَأَوْخَىٰ فِي كُلِّ سَمَاءٍ أَمْرَهَا ۚ وَزَيَّنَّا السَّمَاءَ الدُّنْيَا بِمَصَابِيحَ وَحِفْظًا ۚ ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ

Verse 9: Say, "Indeed, you are disbelievers in the Creator of the earth in two days, and you have made for Him allies. That is the Lord of hosts." (Fussilat /41: 9)

Verse 10: He made him solid mountains from there, blessed the earth and prescribed to him the food of his inhabitants in four days with the same distribution for those who asked him. (Fussilat /41: 10)

Verse 11: And he went to the heavens, and the heavens were still smoke, and he said to him and to the earth, "Come both of you according to my commandments willingly or by compulsion." Both replied, "We came with joy." (Fussilat /41: 11).

Verse 12: So He made seven heavens in two days, and He revealed to each heaven his affairs. And We adorn the nearest heavens with lamps (stars) and as a protector. Such is the decree of the Almighty, the All-Knowing. (Fussilat /41: 12).

Taking Wisdom From the Sky (Thomas Jamaluddin, 2018)

The following are verses 1, 7, 8, 9, and 10 of Surah Ash-Shams/91: 1,7,8,9,10 in the Qur'an as follows:

وَالشَّمْسِ وَضُحَاهَا ١ وَنَفْسٍ وَمَا سَوَّاهَا ٧ فَأَلْهَمَهَا فُجُورَهَا وَتَقْوَاهَا ٨ قَدْ أَفْلَحَ مَنْ زَكَّاهَا ٩ وَقَدْ خَابَ مَنْ دَسَّاهَا ١٠

"And for the sake of the sun and its rays in the morning," "And for the sake of the soul and its perfection (His creation)," "So Allah inspired the soul (the way) of wickedness and piety," "Blessed is the one who purifies the soul," "And indeed the one who defiles it loses." (Ash-Shams/91 : 1,7,8,9,10)

Imam Ghazali once advised, be a Muslim like the sun. He shines because of his personal qualities. And it is able to illuminate and warm the surroundings. Able to benefit the community.

Earth-Moon Synchronization

- The synchronization of the earth-moon rotation causes the lunar revolution period to be the same as its rotation period, which is 27.3 days, so that the full moon face never changes.
- In addition, the Earth's rotation is slowed so that the day is 0.002 seconds longer in a century and the moon is moving away by about 3.5 cm per year.
- In the future, hundreds of millions of years in the future, the rotation of the earth will be synchronized with the rotation and revolution of the moon, which is one day equals one moon, about 48 days according to current measurements.
- The earth brakes the rotation of the moon and the moon also brakes the rotation of the earth which causes synchronization. This is a lesson from nature for leaders and those who are led.
- There are efforts to understand each other and adjust each other. Just like the moon, the led one usually adjusts more quickly, as the leader's influence is usually very strong.
- Then, the leader must adjust as soon as possible. Only authoritarian leaders want one-sided loyalty

The Morning Star, Said in Surah Al-An'am/6: 76-79 (Thomas Jamaluddin, 2018)

فَلَمَّا جَنَّ عَلَيْهِ اللَّيْلُ رَأَى كَوْكَبًا قَالَ هَذَا رَبِّي فَلَمَّا أَفَلَ قَالَ لَا أُحِبُّ الْآفِلِينَ ﴿٧٦﴾ فَلَمَّا رَأَى الْقَمَرَ بَازِعًا
 قَالَ هَذَا رَبِّي فَلَمَّا أَفَلَ قَالَ لَيْنَ لَمْ يَهْدِنِي رَبِّي لَأَكُونَنَّ مِنَ الْقَوْمِ الضَّالِّينَ ﴿٧٧﴾ فَلَمَّا رَأَى الشَّمْسَ بَازِعَةً
 قَالَ هَذَا رَبِّي هَذَا أَكْبَرُ فَلَمَّا أَفَلَتْ قَالَ يُنْقِمُ إِلَهِي بَرِيءًا مِمَّا تُشْرِكُونَ ﴿٧٨﴾ إِنِّي وَجَّهْتُ وَجْهِيَ لِلَّذِي
 فَطَرَ السَّمَوَاتِ وَالْأَرْضَ حَنِيفًا وَمَا أَنَا مِنَ الْمُشْرِكِينَ ﴿٧٩﴾

When the night was dark, He saw a star (and then) He said, "This is my Lord", but when the star sank He said, "I do not like the sunken." Then when He saw the moon rising He said, "This is my Lord." but after the moon had set, He said, "Verily, if my Lord had not instructed me, I would have been one of the perverts." Then when he saw the sun rising, He said: "This is my Lord, this is the greater". So when the sun went down, He said, "O my people, I am detached from what you have fellowshipped with. Indeed, I presented myself to the Rabb who created the heavens and the earth, inclined to the true religion, and I am not among those who associate with God. (Al-An'am/6: 76-79)

The story teaches an important lesson. Relative splendor and superiority are creature traits that have the potential to deceive humans. History has shown many people worshipping the stars or the sun, deifying kings, or at least culturing someone. For this reason, many are also willing to sacrifice to glorify something or the figure they worship. Even though the splendor or superiority may not be intrinsic to the object. The morning star is an example.

The planet Venus does not produce its own light. The planet, nicknamed the beautiful twin of the earth, simply reflects the light of its parent star, the sun. Its brilliance is obtained due to its proximity to the sun and being not far from the earth.

The rainbow is affirmed in Surah Al-Hujarat / 49:1

يَا أَيُّهَا النَّاسُ إِنَّا خَلَقْنَاكُمْ مِنْ ذَكَرٍ وَأُنْثَىٰ وَجَعَلْنَاكُمْ شُعُوبًا وَقَبَائِلَ لِتَعَارَفُوا
 إِنَّ أَكْرَمَكُمْ عِنْدَ اللَّهِ أَتْقَاكُمْ إِنَّ اللَّهَ عَلِيمٌ خَبِيرٌ ﴿١﴾

O man, indeed, We created you from a man and a woman and made you into nations and tribes so that you may know one another. Indeed, the noblest among you in the sight of Allah is the most devout among you. Indeed, Allah is All-Knowing, All-Knowing (Al-Hujarat / 49:13)

The nature of the sky and the structure of the universe

Is it the sky? Is this the blue one? The sky is not always blue, the sky above us can be red, blue, black (Thomas Jamaluddin, 2018) letter *al-Mulk* / 67:3

الَّذِي خَلَقَ سَبْعَ سَمَوَاتٍ طِبَاقًا مَّا تَرَىٰ فِي خَلْقِ الرَّحْمَنِ مِنْ تَفَوتٍ
 فَارْجِعِ الْبَصَرَ هَلْ تَرَىٰ مِنْ فُطُورٍ ﴿٣﴾

Who has created the seven multi-layered heavens. You never see in the creation of God the Merciful something unbalanced. So look over and over again, do you see something unbalanced? (al-Mulk / 67:3)

أَلَمْ تَرَ أَنَّ اللَّهَ خَلَقَ السَّمَوَاتِ سَبْعَ طَبَقَاتٍ ﴿١٥﴾

Have you not noticed how God has created the seven tiered heavens? (Noah/71:15)

The Old Concept of the Seven Heavens

Heaven in a new concept: "Seven heavens" means an infinite number of celestial bodies (∞), Surah Luqman/ 31:27

وَلَوْ أَنَّمَا فِي الْأَرْضِ مِنْ شَجَرَةٍ أَقْلَمٌ وَالْبَحْرُ يَمُدُّهُ مِنْ بَعْدِهِ

سَبْعَةُ أَنْحَرِ مَا نَفَدَتْ كَلِمَتُ اللَّهِ إِنَّ اللَّهَ عَزِيزٌ حَكِيمٌ

And if the trees of the earth become pens and the seas, seven more seas will be added to them after they have dried up, surely the words of Allah will not be exhausted. Indeed, Allah is the Mighty and the Wisest (Luqman/ 31:27).

Sky in a New Concept

There is no layer of sky." The tiered sky" means that the distance of the celestial bodies is different, in the verse Nuh/71:15 it explains that the firm reads, as follows,

أَلَمْ تَرَوْا كَيْفَ خَلَقَ اللَّهُ سَبْعَ سَمَوَاتٍ طِبَاقًا

Have you not noticed how God has created the seven tiered heavens? (Nuh / 71:15), The sky starts from the atmosphere above us, the sky covers the orbital region of satellites and the orbit of the moon

The origins of the universe and its evolution (Thomas Jamaluddin, 2018)

Examining the "6 Times" Process, in Surah (Fushshilat/41: 910,11,12) as follows,

Say: "Surely you should disbelieve in the One who created the earth in two times (III – IV) and you have allies for Him? (9) (The one who has) such is the Rabb of the universe". (10) And he created on the earth solid mountains on it. He blesses it and He determines to him the rate of its (inhabitants) in four times (III – VI). (The explanation is an answer) for those who ask. (11) Then He went to the creation of the heavens, and the heavens were still smoke, and He said to him and to the earth, "Come both of you according to My commandments, willingly or by force." Both replied: "We came with joy". (12) So He made it seven heavens in two times (I – II). He reveals to each of the heavens his affairs. And We adorn the near heavens with brilliant stars and We take care of them as best as We can. Such is the provision of the Almighty and the All-Knowing.

In Surah Anaziat conveys information on the Stages of the Creation of the Universe in 6 periods as follows, QS 79 (An-Naziat)

Period I: (an-Naziat/ 79:27) Are you more difficult to create or the heavens? Allah has built it,

Period II: (an-Naziat/79:28) He exalted his building and then *Enhance it*, (Thomas Jamaluddin, 2018)

Period III: (an-Naziat/79:29) And He made the night pitch black, and made the day bright.

Period IV: (an-Naziat/79:30) And the earth thereafter was spread out by Him.

Time V: (an-Naziat/79:31) It springs forth from it, and (grows) its plants (Thomas Jamaluddin, 2018).

Time VI: (an-Naziat/79:32). And the mountains are firmly set up (an-Naziat/79:33) for your pleasure and for your cattle (Harjono, 2023).

Period I: The Big Bang of the Origin of the Universe (Thomas Jamaluddin, 2018):

Surah al-Anbiya' /21:30 -- 13.7 years ago The Origin of the Universe, And did the disbelievers not know that the heavens and the earth were once united, and then We separated between them; and We made every living thing out of water; So why don't they believe?

Period II, Nature Expands (Thomas Jamaluddin, 2018)

The universe expands, the galaxy gets farther away, it looks taller

Surah an-Naziat / 79:28, mentions the verse that the universe is exalted or developed:

وَرَفَعَ سَمَكَهُ فَسَوَّاهُ

He exalts his building and perfects it, (an-Naziat / 79:28)

Verse 47 of Surah Adh-Dhariyat/51:47 in the Qur'an is:

وَالسَّمَاءَ بَنَيْنَاهَا بِأَيْدٍ وَإِنَّا لَمُوسِعُونَ

"And the heavens we rose with (our) strength and indeed We really have the power to extend it." (Adh-Dhariyat/51:47)

Period III: The formation of the solar system, including the Earth (Thomas Jamaluddin, 2018)

In Surah an-Naziat /79:29

وَاعْطَشَ لَيْلَهَا وَأَخْرَجَ ضُحَاهَا

and he makes the night pitch black, and the day bright. (an-Naziat /79:29)

The existence of the sun as a source of light, the earth rotates making night and day the energy of the star (sun) from nuclear reactions. The stellar wind blows to dissipate the wrapping dust, leaving a disk of planet-forming dust, Photo Planet forming planets, Guard Astroids and comets.

Period IV: Evolution of the Earth (Thomas Jamaluddin, 2018)

in Surah an-Naziat/ 79:30

وَالْأَرْضَ بَعْدَ ذَلِكَ دَحَاهَا

And the earth after that was stretched out by Him, formed continents ... and He spread it (an-Naziat/ 79:30)

Period V: Sending water to Earth from comets (Muh. Rahman Djuwansah, 2023)

In Surah an-Naziat/ 79:31

أَخْرَجَ مِنْهَا مَاءَهَا وَمَرْعَاهَا

It emits from it its springs, and (grows) its plants. (an-Naziat/ 79:31).

Water on Earth comes from the collision of comets that fuse in the earth's material. The volcanic process of volcanoes releases water stored in the earth's material into water vapor. When the earth begins to cool, the water vapor melts into water. The process of hundreds of millions of years has made puddles in the form of oceans from

Period VI: Geological processes and the birth of animals and humans (Harjono, 2023)

In an-Naziat/ 79:32-33. The first animals appeared about 630 million years ago. The first humans were about 100,000 years ago.

وَالْجِبَالَ أَرْسَاهَا مَتَاعًا لَّكُمْ وَلِأَنْعَامِكُمْ

And the mountains are firmly set up for your pleasure and for your livestock (an-Naziat/79:32-33)

Is life beyond Earth? (Thomas Jamaluddin, 2018)

Signs of the Qur'an Surah Ash-Shura /42:29: There Are Living Beings in the Sky

وَمِنْ آيَاتِهِ خَلْقُ السَّمَوَاتِ وَالْأَرْضِ وَمَا بَيْنَهُمَا مِنْ دَابَّةٍ وَهُوَ
عَلَى جَمْعِهِمْ إِذَا يَشَاءُ قَدِيرٌ ﴿٢٩﴾

Among His verses is the creation of heaven and earth and living beings scattered in both. He is Almighty gathering them when He wills. (Ash-Shura /42:29)

وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِنْ مَاءٍ فَمِنْهُمْ مَنْ يَمْشِي عَلَى بَطْنِهِ وَمِنْهُمْ مَنْ يَمْشِي عَلَى
رِجْلَيْنِ وَمِنْهُمْ مَنْ يَمْشِي عَلَى أَرْبَعٍ يَخْلُقُ اللَّهُ مَا يَشَاءُ إِنَّ اللَّهَ عَلَى كُلِّ
شَيْءٍ قَدِيرٌ ﴿٤٥﴾

And Allah has created living things out of water. Among them walk on their stomachs, with two legs, or with four legs. God created what He wanted. Indeed, Allah is Almighty over all things. (an-Nur/24:45)

Signs of the Quran: There are people in the sky

أَلَمْ تَرَ أَنَّ اللَّهَ يُسَبِّحُ لَهُ مَنْ فِي السَّمَوَاتِ وَالْأَرْضِ وَالطَّيْرِ صَفَقَتِ كُلِّ
قَدْعٍ صَلَاتُهُ وَتَسْبِيحُهُ وَاللَّهُ عَلِيمٌ بِمَا يَفْعَلُونَ ﴿٤١﴾

Do you not know that to Allah there are blessings on the people in the heavens and on the earth and the birds that spread their wings? Each of them knows how to pray and pray prayers. Allah knows what they are doing (an-Nur / 24:41)

End of the Universe (Thomas Jamaluddin, 2018)

In Surah ar-Rum /30:41. Human actions cause destruction of the earth

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ يَرْجِعُونَ

It has been seen that the destruction on land and in the sea is caused by the work of human hands, so that Allah may feel to them a part of their deeds, so that they may return (to the right path) (ar-Rum /30:41)

Apocalypse of the Earth: The great impact of the Sky "split" by dust, mentioned in Surah (Al-Qiyaamah/75:6,7,8,9,10,11)

فَإِذَا نُفِخَ فِي الصُّورِ نَفْخَةٌ وَاحِدَةٌ ﴿١٣﴾ وَحُمِلَتِ الْأَرْضُ وَالْجِبَالُ فَدُكَّتَا دَكَّةً وَاحِدَةً
﴿١٤﴾ فَيَوْمَئِذٍ وَقَعَتِ الْوَاقِعَةُ ﴿١٥﴾ وَانْشَقَّتِ السَّمَاءُ فَهِيَ يَوْمَئِذٍ وَاهِيَةٌ ﴿١٦﴾

6 He said, "When is the Day of Resurrection?" (Al-Qiyaamah/75:6)

7. So if the eyes are wide (fear), (Al-Qiyaamah/75:7)

8. And when the moon has lost its light, (Al-Qiyaamah/75:8)

9. And the sun and the moon are gathered, (Al-Qiyaamah/75:9)

10. On that day man said: "Where is the place where you are going?" (Al-Qiyaamah/75:10)

11. Never Not! There is no place to take refuge (Al-Qiyaamah/75:11)

The Sun annexes the moon: Could it be faster than 5 billion years?

يَسْأَلُكَ النَّاسُ عَنِ السَّاعَةِ قُلْ إِنَّمَا عِلْمُهَا عِنْدَ اللَّهِ وَمَا يُدْرِيكَ لَعَلَّ السَّاعَةَ تَكُونُ قَرِيبًا

Man asks you about the Day of Resurrection. Say, "Indeed, the knowledge of the Day of Resurrection is only in the sight of Allah." And do you know (O Muhammad), it may be that the Day of Resurrection is near (Al-Ahzab:33/63)

The universe continues to expand, galaxies can get closer to each other

In Surah Al-Anbiya' /21:104, Allah swt said,

يَوْمَ نَطْوِي السَّمَاءَ كَطَيِّ السِّجِلِّ لِلْكُتُبِ كَمَا بَدَأْنَا أَوَّلَ خَلْقٍ نُعِيدُهُ وَعَدًا عَلَيْنَا إِنَّا كُنَّا فَاعِلِينَ ﴿١٠٤﴾

That is on the day We roll the sky as rolling up sheets of paper. As We have begun the first creation, so We will repeat it. That is a promise that We will surely keep; Indeed, We are the ones who will carry it out. (Al-Anbiya' /21:104)

The Milky Way collides with other galaxies, the stars seem to be approaching and the planets fall apart, the sky rolls up, the stars come close. (The process is millions of years)

Analysis of Interpretation and Scientific Interpretation of Qur'anic Verses

Interpretation Methods in a Scientific Context

Tafsir Al-Quran is the process of explaining, interpreting, and understanding the texts in the Quran. In a scientific context, interpretation involves an attempt to understand a text in the context of modern scientific knowledge. This could include linguistic research to understand the meaning of words and phrases in their original contexts, as well as interdisciplinary research that integrates understandings from fields such as history, archaeology, and of course, the natural sciences. This method of interpretation in a scientific context often involves a dialogue between religious texts and scientific discoveries, seeking conformity or contrast between the two.

Case Study: Interpretation of Verses Related to Astrophysics

In the context of astrophysics, some verses of the Quran have been interpreted to align with modern scientific understanding. For example, a verse that talks about the expansion of the universe and the Big Bang theory. This interpretation requires an in-depth analysis of the original text and its historical context, as well as a solid understanding of related astrophysical theories. This case study can involve a comparative analysis between traditional interpretations of interpretation and contemporary scientific theories, evaluating how the verse has been interpreted over time and in a variety of contexts.

Discussion on Conformity and Differences

The discussion of the conformity and differences between the interpretation of the Qur'an and current scientific understanding is an important part of this analysis. This involves questions about how and whether we should read religious texts in a way that is consistent with scientific understanding. On the one hand, there is an argument that religious texts are often metaphorical or symbolic and are not meant to be interpreted scientifically. On the other hand, there is a view that scientific findings can help enrich our understanding of these religious texts. This discussion should also consider the differences between the interpretation of texts in the context of religion and science, given that they may have different methodologies and goals.

Through the analysis of the interpretation and scientific interpretation of Quranic verses, this chapter seeks to provide a deeper understanding of how religious texts can

interact with, and sometimes correlate with, scientific knowledge, while maintaining caution not to reduce religious texts to mere scientific narratives.

Scientific Views and Criticisms of the Scientific Interpretation of the Qur'an

Scientific Approach to Religious Texts

A scientific approach to understanding religious texts, such as the Quran, involves the use of scientific methodologies to analyze and interpret their verses. In this context, the scientific approach attempts to explore and identify aspects of the text that may have correlation or conformity with modern scientific knowledge. This often includes:

- a. Language and linguistic analysis to understand the meaning of words and their contexts.
- b. The application of historical and cultural context to understand the context in which the text was written.
- c. Evaluate the text in the light of recent scientific discoveries to see if there are parallels or contradictions.
- d. This approach allows for a broader interpretation and often attempts to find a connection between religious teachings and scientific understanding.
- e. This can generate new insights and enrich our understanding of religious texts.

Scientific Critical Analysis

However, the scientific approach to religious texts also raises a number of criticisms and challenges:

- a. Reductionism: There are concerns that the scientific approach may reduce religious texts to mere natural or historical phenomena, ignoring their metaphysical, ethical, and spiritual dimensions.
- b. Anachronism: Applying modern scientific understanding to ancient texts can be anachronistic, where the text is interpreted in a way that the original author never intended.
- c. Confirmation Bias: There is a risk that individuals may seek out or interpret evidence in religious texts that support certain scientific views or theories, while ignoring contradictory information.
- d. Metaphorical and Symbolic Nature: Many religious texts are symbolic or metaphorical, and literal scientific interpretations of those texts can deviate from their true meaning or overlook the diversity of interpretations that may exist.
- e. A scientific approach to religious texts requires a careful balance between respecting the origins of the text, its context, and its intrinsic meaning, while also exploring the ways in which scientific knowledge can provide additional insights or new understandings. It is important to acknowledge the limitations and possibilities of interpretation, as well as to maintain respect for the diversity of interpretations and meanings that religious texts offer.

Case Studies and Applications

Historical Case Studies

Historical case studies in the context of the relationship between the Qur'an and astrophysics can involve an in-depth analysis of how certain verses of the Qur'an have been interpreted throughout history in relation to the understanding of astronomy and astrophysics.

- a. Case Study Examples: One case study could include an analysis of how ancient Muslim astronomers and scientists, such as Al-Biruni or Ibn Sina, understood and interpreted Quranic verses related to astronomical concepts. How their understanding of the universe, which may reflect the texts of the Quran, influenced their work and discoveries in the fields of astronomy and astrophysics.

- b. Evolution of Interpretation: This study can also explore how the interpretation of these verses has evolved over time, particularly with advances in modern science. By comparing historical and contemporary interpretations, it is possible to understand how scientific and technological understanding affects the way we understand religious texts.

Applications in Education and Research

Applications of the study of the relationship between the Quran and astrophysics in education and research can be very diverse, offering a variety of ways to integrate science and religion in curriculum and research.

- a. Cross-Disciplinary Education: In education, this discovery can be used to develop a curriculum that is interdisciplinary, combining the study of religious texts with the natural sciences. This can help students understand how different areas of knowledge interact with each other and contribute to each other.
- b. Promotion of Science-Religion Dialogue: In the context of research, studies like this can promote dialogue between science and religion, showing how the two can complement each other and provide richer insights into the world.
- c. Interdisciplinary Approach in Research: These case studies can also inspire interdisciplinary research, where methods and concepts from the natural sciences and religious studies are combined to gain a deeper understanding of a particular topic.

Overall, case studies and applications in this context not only serve as academic tools, but also as a means to expand understanding and appreciation of the diversity of knowledge and approaches to understanding the universe. This paves the way for a more holistic and integrated approach to education and research.

CONCLUSION

The study explores the connection between the Quran and astrophysics, revealing the relevance of Qur'anic verses to modern astrophysical concepts like the expansion of the universe and the orbit of celestial bodies. The research highlights the importance of an interdisciplinary approach to combining theological and scientific understanding, and the value of dialogue between science and religion in understanding the universe's reality. The Qur'an is considered absolute truth with interpretations that can evolve according to changing times. The study has implications for developing an integrative educational curriculum that emphasizes the relationship between science and religion. It also suggests that religious texts can be interpreted in various ways, including scientific contexts. The study also emphasizes the importance of considering historical, cultural, and linguistic contexts in religious text interpretation. Future research should involve deeper study of other religious texts and scientific concepts, comparative studies between scientific interpretation of the Quran and other religious texts in astrophysics, and a multidisciplinary approach involving experts from different fields.

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