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EVALUATION OF NATURAL CONCEPTS IN THE QUR'AN FROM THE VIEWPOINT OF BASIC NATURAL SCIENCES

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ABSTRACT

This study aims to examine the Qur'anic concepts of nature through the lens of basic natural sciences. As the holy book of Muslims, the Qur'ān contains numerous references to natural phenomena that have been the subject of study by scientists and thinkers. This study analyzes concepts such as the creation of the universe, the water cycle, and the composition of the heavens and the earth to understand their relevance to contemporary scientific knowledge. Using a descriptive-analytical approach, the study examines the extent to which scientific explanations agree or diverge from Qur'ānic understandings, and how interpretations of these concepts can contribute to the advancement of science. The results show that the Qur'ān contains scientific references that can be interpreted broadly and deeply, while at the same time providing opportunities for religion to encourage scientific exploration. The findings are expected to enrich the understanding of Qur'anic verses and provide new insights for the development of basic sciences.

INTRODUCTION

This article invites readers to connect the understanding of religion and science, especially the Qur'an, with basic natural sciences. By studying the natural concepts in the Qur'an, we can find common ground between the Islamic worldview and modern scientific

discoveries. This opens up opportunities to discuss how religious teachings can support each other and synergize with the advancement of science.

It is often assumed that science and religion walk on different, even conflicting paths. However, by discussing natural concepts in the Qur'an from the perspective of basic science, this article attempts to bridge this gap. It shows that science and religious belief are not necessarily at odds, but can mutually enrich our understanding of natural phenomena.

The method used in this article is a descriptive qualitative approach, which allows the author to analyze the texts of the Qur'an and compare them with existing scientific concepts. The aim is to explore the meaning in the verses related to natural phenomena and relate them to scientific knowledge. This opens up the possibility for a broader interpretation of the verses, as well as deepening our understanding of the Qur'an.

Through the discussion of the relationship between the Qur'an and natural sciences, readers are invited to think critically and analyze religious texts with a scientific approach. This not only enriches the discourse on religious education and science, but also encourages the importance of open and rational thinking. In addition to the scientific aspect, this article also invites us to explore the philosophical and ethical values contained in the Qur'an, which can deepen reflection on how humans should interact with nature and utilize science for the good of humanity. Overall, this discussion is important to enrich the dialogue between science and religion, provide new perspectives in understanding the Qur'an, and open up space for constructive intellectual discussion.

RESEARCH METHOD

This study uses a descriptive qualitative method, which allows for in-depth analysis of the texts of the Qur'an and their comparison with modern scientific concepts. The purpose of this method is to explore and explore the meaning of verses related to natural phenomena, and to relate them to scientific knowledge. This study is a type of literature study, where the data used comes from the Qur'an, classical and contemporary interpretations, and scientific literature relevant to natural sciences, such as cosmology, biology, geology, and environmental science. The main source of data is the Qur'an, with a focus on verses that discuss natural phenomena. Secondary data sources include natural science books, scientific articles, and

related research journals. In collecting data, the author uses documentation techniques, namely by collecting, reviewing, and analyzing verses of the Qur'an and relevant scientific literature. To analyze the data, the content analysis method is used, which includes identification, classification, and interpretation of verses of the Qur'an related to natural phenomena.

RESULT AND DISCUSSION

RESULT

Basic Natural Science Definition

Basic Natural Science (BSN) is a branch of science that studies natural phenomena in a systematic, measurable manner, and based on empirical evidence. Basic Natural Science can be interpreted as Natural Science that studies phenomena in the universe so that concepts and principles are formed. Basic Natural Science only studies basic concepts and principles that are essential, for example Biology, Physics and Chemistry, these three sciences also have derivatives.(Suherman, 2022)The goal is to understand the basic principles that govern the universe and the relationships between the elements within it. The scope includes the universe as a whole, both in outer space, on earth and on the earth's surface.(Asia, 2019)

The scope of IAD in general includes:

a. Physics: Studying the properties and behavior of matter, energy, and the interactions between the two.
b. Chemistry: Study of the composition, structure, properties, and changes of matter.
c. Biology: The study of life and living organisms, including their structure, function, development, and evolution.
d. Mathematics: Studying numbers, space, structure, and relationships between abstract objects, which are the basis for modeling natural phenomena.

Natural science is relative and can change according to the progress of human civilization and is a collection of knowledge about basic concepts in the fields of Natural Science and technology.(Rahmatiyah, 2024)

Overall, basic natural science provides a solid foundation for understanding the physical and living world through an approach that emphasizes observation, experimentation, and testable theory.

Natural Concepts in the Qur'an: Identification and Discussion of Natural Phenomena

The Qur'an contains many verses that describe natural phenomena as signs of Allah's greatness. There are verses that discuss scientific terms, for the discussion of verses containing scientific terms is called tafsir al-Ilmy, namely the interpretation that reveals scientific terms in the expressions of the Qur'an and tries to explore scientific signs from it to then be developed into scientific concepts, but the Qur'an is not a scientific book like scientific books today, but the Qur'an is a book of guidance for the happiness of human life in the world and in the hereafter, so it is not surprising that in it there are various instructions both implied and explicit related to science, in order to support its function as a book of guidance.(Gojali, 2004)The Qur'an itself is a source of knowledge and a source of inspiration for various disciplines of science and technology. The Qur'an contains many concepts of science, knowledge and technology and praise for people of knowledge. In Islam, everyone is required to seek knowledge, both religious knowledge and science and technology.(Afifah, 2020)

Although mostly presented in a spiritual context, these natural concepts show the order and principles of the universe that are in line with scientific understanding. Some of the natural phenomena discussed in the Qur'an include the creation of the heavens and the earth, the formation of humans, the water cycle, the life of plants, animals, and so on. In the Qur'an there is an explanation of the universe and its various phenomena explicitly in no less than 750 verses.(Muhajir, 2024)There are no less than 750 verses that expressly describe things about life, almost one-eighth of the verses admonish believers to study the universe, to think, use the best possible reasoning, and to make scientific activities a part of which is inseparable from people's lives.(Ichwan, 2001)

a. Creation of the Universe

The process of creation of nature in the Qur'an is found a lot but the information is only an outline or basic principles, because the Qur'an is not a scientific book or a book of science that is descriptive. The verses of the Qur'an that explain the creation of the universe are approximately *53 verses. While in Mu'jam Al-Fuhras there are 9 verses about the creation of the universe.(Al-Baqi, 1992)One of the verses that mentions this is:*

"Indeed, your Lord is Allah Who created the heavens and the earth in six ages, then He sat on the Throne. He closed the night to the day that followed quickly, and (He also created) the sun, the moon and the stars (each -each) submit to His commands. Remember, creating and ruling is only the right of Allah, the Lord of the worlds."(QS. Al-A'raf: 54).(Web Interpretation)

This verse describes the creation of the world using the word "day", which can be interpreted as a certain period of time. From a scientific perspective, this can be understood as a process that took place over a very long time, which is in accordance with the Big Bang theory which states that the universe expanded over billions of years.

b. Human Formation Process

In the Qur'an basically discusses the process of human creation step by step, event by event which is then described in detail with easy-to-understand language. The Qur'an manifests the process of human creation in QS. al-Mu'minun verses 12-14 starting from the essence that comes from the soil. Then the essence becomes semen which is stored in a solid place, namely the womb. Then the semen becomes a clot of blood, then the clot of blood becomes a lump of flesh, then from a lump of flesh becomes bones, and the bones are covered with flesh. Then he becomes a creature that is shaped like a human.(Rosidah, 2021)

"And indeed We have created man from an essence (originating) from the earth. Then We made the essence of semen (which is stored) in a firm place (womb). Then We made the semen a clot of blood, then We made a clot of blood a lump of flesh, and We made that lump of flesh into bones, then We wrapped the bones in flesh. Then We made him a creature that was different (in form). So blessed be Allah, the Best Creator."(QS. Al-Mu'minun: 12-14).(Web Interpretation)

This verse explains how humans are formed through clear stages, starting from water (semen) to a lump of blood and flesh. This is in line with the modern biological understanding of human development through the embryonic stages starting from sperm and egg cells, developing into a zygote, then into a fetus.

c. Water Cycle

The Qur'an also discusses the phenomenon of rain and the water cycle in detail: "Allah, He is the one who sends the wind, then the wind moves the clouds and Allah spreads them in the sky as He wills, and makes them lumpy; then you see rain coming out of the gaps, then when the rain falls on His servants whom He wills, suddenly they become happy." (QS. Ar-Rum: 48).(Web Interpretation)

This verse describes the hydrological cycle similar to the understanding in geography and meteorology, where water evaporates, forms clouds, and falls as rain to fertilize the earth.

Regarding this verse, Buya Hamka explained, "He is the one who sends the wind." And in the previous verse in verse 46 Ar-Ruum Allah explains about Allah sending the wind. The wind that is stated now is more active in nature than the wind in verse 46:(Amrullah, 2007)

"And among His signs is that He sends the winds as bringers of good tidings and that you may taste of His mercy and that the ships may sail by His command and that you may seek of His bounty; perhaps you will be grateful."(QS. Ar-Rum: 48)(Web Interpretation)

d. Plants and Growth

The Qur'an also mentions the importance of plants in human life:

"And We made therein gardens of date palms and grapes and We caused springs to gush forth therein,"(QS. Yasin: 34).(Web Interpretation)

This verse emphasizes the role of plants as a source of life. In science, plants are essential in the carbon cycle and photosynthesis, which converts solar energy into chemical energy to support life on earth.

e. Animal Diversity

The diversity of animal species is also described in the Qur'an:

"...And from water We made all living things. So why do they not believe?"(QS. Al-Anbiya: 30).(Web Interpretation)

This verse reminds us that life originated from water, in line with the scientific understanding of the origins of life and ecosystems that depend on water. It also hints

at the creation of all living things as forms of animal diversity (living things other than plants).

Basic Natural Science Perspective

Along with the development of science, various theories about the universe, life, and other natural processes have emerged and many of them are in line with several verses in the Qur'an that discuss natural phenomena. In this context, the author again provides an explanation of the natural phenomena contained in the Qur'an through a scientific perspective. The Qur'an can be considered a book that has insights relevant to scientific concepts, although more detailed scientific explanations have only been found in the modern era. Quraish Shihab argues that discussing the relationship between the Qur'an and science is not judged from the number of branches of science contained in it, nor by showing the truth of scientific theories. But the discussion should be placed in a more appropriate proportion according to the purity and sanctity of the Qur'an and in accordance with the logic of science itself.(Shihab MQ, 1992)

Scientific Views on Natural Phenomena in the Qur'an

Some natural phenomena mentioned in the Qur'an can be combined with scientific theories accepted in the world of modern knowledge. As the author has mentioned earlier, here are some natural phenomena according to scientific views:

a. Oscillation Theory

The oscillation theory explains that the universe has no beginning and no end.(Rusli, 2013)The theory of cosmic oscillations or the "Big Bounce" is the idea that the universe did not begin with a single big bang, but went through a repeating cycle of expanding and contracting over and over again. According to this theory, after the universe expanded to its maximum point, it began to shrink to extreme densities, then "bounced" and expanded again. This cycle repeats itself with no beginning or end, making the universe seem to be "born again" each time it contracts and begins a new expansion.

However, this theory is controversial. The conditions required for it to "bounce" are unclear, and the available observational evidence suggests the universe is continuing to expand, possibly without contraction.

b. Big Bang Theory

This theory is based on the assumption that in the beginning there was an incredibly large mass (big bang) with a very large density.(Rusli, 2013)The Big Bang theory is a theory accepted by most scientists to explain the origin of the universe. According to this theory, the universe began from a very dense and hot singularity point about 13.8 billion years ago, then expanded and expanded into the universe we know today. This concept is in line with several verses in the Qur'an that describe the creation of the heavens and the earth in an orderly manner:

"Have not the disbelievers known that the heavens and the earth were of one joined piece, then We parted them..."(QS. Al-Anbiya: 30).(Web Interpretation)

This verse describes a process of separation between the heavens and the earth, which can be understood as a major event similar to the Big Bang theory, where the universe began from a very dense state and then expanded. This is in accordance with the scientific view that describes the universe as an entity that continues to expand after the big bang.

At that time, the universe expanded. Imagination into the past takes us to smaller and smaller universes until we reach the beginning, zero. At this zero point the universe began, namely from a big explosion or bang; The Big Bang. (Purwanto, 2012)

c. Expansion and Contraction Theory

This theory is based on the idea that the universe experiences a cycle every 30 billion years, namely the occurrence of expansion mass and contraction mass. In the expansion mass, galaxies and their stars were formed. This expansion is caused by the energy from the hydrogen core reaction that forms various elements and then shrinks again because it releases very high heat energy.(Rusli, 2013)

d. Theory of Evolution

The theory of evolution developed by Charles Darwin explains how living things develop and adapt through the process of natural selection. Although the Qur'an does not explicitly explain the theory of evolution, several verses speak of the creation and development of living things in ways that can be reconciled with this theory:

"And from water We made every living thing. So why do they not believe?"(QS. Al-Anbiya: 30).(Web Interpretation)

This verse speaks of the origin of life starting from water, in accordance with the scientific understanding that water is an essential element in the formation of life. The scientific discovery of the first living cells appearing in the oceans supports this verse. Although it does not mention the theory of evolution directly, the Qur'anic concept of the origin of life and the essential role of water as the first element of life is in line with modern scientific knowledge.

e. Water Cycle

The water cycle is a natural process involving evaporation, cloud formation, rain, and the return of water to the earth in various forms. This concept is consistent with several verses in the Qur'an that describe the role of water in life:

"Allah, He is the one who sends the wind, then the wind moves the clouds and Allah spreads them in the sky as He wills, and makes them in lumps; then you see the rain coming out of the gaps, then when the rain falls on the servants- He willed, suddenly they became happy."(QS. Ar-Rum: 48).(Web Interpretation)

This verse describes the water cycle which has great benefits for life. In this verse Allah reminds us of a very important scientific fact. Modern science only revealed it after several centuries of the revelation of the Qur'an. Namely, that the water in the sea evaporates. Then the water vapor rises into the sky and becomes clouds. Then the clouds return to earth in the form of rain. And the sky returns water to earth, and a water cycle is completed.(Rusli, 2013)This cycle, which includes evaporation, condensation, and precipitation, is a basic principle in hydrology and meteorology.

DISCUSSION

Interpretation of Natural Concepts in the Qur'an that Seem to Contradict Science.

In the study of the relationship between the Qur'an and science, there are several concepts in the Qur'an that seem to contradict scientific knowledge, both literally and symbolically. However, most of these inconsistencies can be explained by a deeper

understanding of the context of the revelation, the methods of interpretation used, and the application of more recent scientific knowledge.

a. Creation of Nature in Six Days

Scientifically, the Big Bang theory and cosmic evolution explain that the universe developed over billions of years, much longer than the time mentioned in the Quran. In a scientific view, these "six days" can be considered a metaphor or symbol to describe the creation process that occurred over a long period of time, not a literal six days.

Contemporary Interpretation;

Some Muslim scholars, such as Seyyed Hossein Nasr and MA Muzaffar, argue that the "six days" in the Qur'an refer to structured and sequential phases of creation, not to a measurable period of time such as a day in the human sense. Thus, a "day" can be understood as a broader period of time rather than a direct measurement of time. The Qur'an does not explain the scientific order or taxonomy of creation in depth, but rather emphasizes that the creation of the universe occurred by God's will.(Seyyed Hossein Nasr and MA Muzaffar, 2002)

b. Creation of Man from Clay

Modern scientific theory explains that humans were not created directly from the ground, but through a biological evolutionary process involving primate ancestors. Therefore, a literal interpretation of this verse may seem to contradict scientific findings.

Contemporary Interpretation;

Some Muslim scholars and scientists, such as Harun Yahya, argue that this verse should be understood in the context of the creation of the first human, Adam, who was created directly by God from the materials found on earth. This does not mean that the entire origin of humans is explained in this verse, but rather refers to the creation of the first human who then developed through the process of evolution. The Qur'an emphasizes the spiritual aspect of human creation, which remains in God's will, while scientific theories focus more on biological explanations.(Yahya, 2003)

c. The Qur'an and the Theory of Evolution

The theory of evolution proposed by Charles Darwin explains that species develop through natural selection and gradual change over generations. In contrast, the Qur'an contains many references to the creation of living things in a more direct way.

Contemporary Interpretation;

For many Muslim scientists who accept the theory of evolution, such as Nidhal Guessoum, the Qur'an's view of the creation of life through water does not contradict science. Water is essential for life, and this verse can be understood as indicating that the creation of life begins in conditions that support life (such as the presence of water). In this regard, the Qur'an does not provide a detailed explanation of the mechanisms of biological evolution, but rather points to the understanding that God is the Creator of all forms of life, including the processes involved in evolution.(Guessoum, 2011)

d. Movement of the Sun and Moon

According to modern astronomy, the Earth revolves around the Sun, not the other way around. Therefore, this verse may seem to contradict the scientific understanding of the solar system.

Contemporary Interpretation;

However, many Muslim scholars, such as Ziauddin Sardar, argue that these verses should be understood in the context of human perception at that time. The Qur'an speaks in a way that could be understood by people at the time of revelation. Like metaphorical or idiomatic language in human languages, the terms "movement of the sun" or "alternation of night and day" refer more to phenomena that humans see on Earth, rather than to scientific explanations of planetary movements. Therefore, these verses should not be interpreted literally, but rather to explanations of natural phenomena that humans experience.(Sardar, 1999)

e. The Role of Revelation in Explaining Natural Phenomena

In general, the revelations in the Qur'an often convey concepts about the universe in a more symbolic and philosophical way, rather than scientific. This shows

that the Qur'an places more emphasis on teaching morals, ethics, and a spiritual understanding of the world, rather than aiming to provide detailed scientific knowledge.
Contemporary Interpretation

It is important to understand that the revelations in the Qur'an are not a scientific textbook explaining in detail natural phenomena. Therefore, the discrepancies between scientific knowledge and natural concepts in the Qur'an often stem from an overly literal interpretation of the verses. For example, Muslim thinkers such as Mustafa Akyol and Khaled Abou El Fadl suggest that a hermeneutic approach be used to understand the deeper meaning of the Qur'anic text, which allows us to see the correspondences between religious teachings and scientific discoveries without ignoring the historical and linguistic context.

Evaluation of Conformity and Correlation: Analysis between Natural Concepts in the Qur'an and Scientific Knowledge

In general, many natural concepts in the Qur'an show conformity with modern scientific discoveries. Although the Qur'an conveys these verses in a spiritual context and does not explain them in scientific detail, some relevant points between the Qur'an and science are:
Consistency Between Natural Concepts in the Qur'an and Scientific Knowledge:

1. Creation of the Universe: The Qur'an describes the creation of the universe in six "days," which can be understood as a long period of time. This is consistent with the scientific theory of the evolution of the universe through the Big Bang. Some scientists look to the Big Bang theory, which proposes that the universe began in a very dense and hot state, and then expanded over billions of years to its present form. Although the Qur'an does not explicitly describe the Big Bang, the concept of an orderly creation and the processes that occur in "six days" can be interpreted as a metaphor or description of a process that occurs over a long period of time. This concept is not contrary to science, but rather a symbolic way of explaining it.
2. Formation of Man: The verse that mentions that man was created from water is consistent with modern biological understanding of the process of embryonic development, which begins with sperm and egg cells. Scientifically, the formation of

man can be explained through the theory of evolution, which proposes that humans originated from primitive organisms that developed through natural selection. However, the Qur'an describes man as first being created from clay, which may be intended to indicate man's basic relationship to the earth. This does not negate scientific theory, but provides a theological perspective that man is ultimately a creature of God that is superior to all other creatures.

3. Water Cycle: The verses describing rain are consistent with the scientific understanding of the water cycle, which involves evaporation, condensation, and precipitation, and is a phenomenon that can be explained scientifically through the laws of hydrology. The Qur'an describes water as a life-giving element, which is consistent with the scientific understanding of its importance in ecosystems. Although the Qur'an does not describe hydrological processes in detail, these verses nevertheless reflect the regularity and continuity of natural processes that can be seen as signs of God's power.
4. Plant Growth: The Qur'an mentions the importance of plants in life, relating to the process of photosynthesis that allows plants to produce oxygen and energy for the ecosystem.
5. Animal Diversity: The concept that all life originated from water is consistent with the theory of biogenesis and the ecological understanding that shows the importance of water for life. This statement can be linked to the scientific understanding of the origins of life, where water is considered a major component in the chemical processes that produce life. The scientific theory of evolution and the origins of life on earth, although very detailed in explaining biological processes, does not contradict the Qur'anic idea that God is the Creator of life, including living things that originated from water.

However, despite the correspondence between the verses of the Qur'an and scientific knowledge, the Qur'an does not explain natural processes in detail with a modern scientific approach. These verses function more as instructions for mankind to reflect and witness the greatness of God, rather than as scientific works that explain natural mechanisms in detail.

Understanding Nature in the Qur'an

In understanding nature, the Qur'an can be seen using two approaches: literal and metaphorical. Some verses may be understood literally, while others are more metaphorical, depending on the context:

1) Literal

   Verses that describe natural phenomena such as the creation of the heavens and the earth, the growth of plants, or the diversity of animals are often taken literally. These verses describe processes that can be directly observed and understood.

2) Metaphorical

   Some verses, especially those describing God's power over the universe, are often understood metaphorically. For example, the words "six days" in the creation of the universe do not have to be interpreted as six days in earth time, but can be understood as a longer period of time.

With the development of science, many Muslim scientists and scholars see the relationship between the verses of the Qur'an and science as an invitation to reflect on and understand the universe, which continues to develop through the latest scientific discoveries.

Application of Scientific Approach to the Verses of the Qur'an

The Koran basically provides guidance to scholars in verses related to science. One of the approaches that must be applied by al-tafsir al-ilmi activists in analyzing Al-Quran verses, especially the kauniyah verses, is to use a scientific approach.

In order to understand the extent to which the natural concepts contained in the Qur'an can be explained by modern science, a scientific approach to the verses of the Qur'an is essential. This is not to claim that the Qur'an is a scientific book, but to see how the revelations conveyed in the Qur'an reflect the regularities of nature that can be understood through a scientific approach. Some steps in applying a scientific approach to the verses of the Qur'an include:

a) Contextual Interpretation: Interpreting verses that discuss nature in light of current scientific understanding. This means reading the verses in light of recent scientific discoveries, and avoiding interpretations that are too rigid or dogmatic.

b) Dialogue between Science and Religion: Building a constructive conversation between science and religion by understanding that both can complement each other. Science seeks to explain how natural phenomena occur, while religion explains the reasons behind these phenomena, with God as the creator and ruler of the universe.

c) Falsifiability and the Scientific Method: Modern science relies on the scientific method to test theories through experimentation and observation. Although some concepts in the Qur'an may not be directly testable through the scientific method, the basic concepts of natural order and creation can be seen as the basis for the scientific quest to understand the laws of nature.

CONCLUSION

Basic natural sciences and natural concepts in the Qur'an complement each other. The Qur'an describes the order of the universe that can be further studied through science. Although presented in a spiritual and metaphorical manner, these concepts reflect natural phenomena that can be understood with a scientific approach. Aspects such as the creation of nature, the cycle of life, and other natural processes are relevant to modern scientific theory, indicating that religion and science are not in conflict, but rather mutually supportive.

The scientific approach to the verses of the Qur'an reveals how these two fields can complement each other in understanding nature. The Qur'an encourages humanity to reflect and explore the order of the universe, which in turn stimulates further scientific inquiry. It also reminds humans of the greatness of God as Creator.

In general, although the Qur'an does not explain in detail, concepts such as the creation of the universe, the evolution of life, the water cycle, and photosynthesis can be understood through science. The Qur'an emphasizes the purpose and meaning of creation, and invites people to reflect on the greatness of God, so that science and religion can complement each other in the search for truth.

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