

**ZAGHLUL AL-NAJJAR'S INTERPRETATION ABOUT EARTH
ROTATION IN SURAH AL-ANBIYA' VERSE 33**

(Study of Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm)



FINAL PROJECT

Submitted to Ushuluddin and Humanities Faculty
in Partial Fulfilment of The Final Project Requirements for The Degree of S-1
of Islamic Theology on al-Qur'anic Sciences and Interpretation

By:

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**SPECIAL PROGRAM
OF USHULUDDIN AND HUMANITIES FACULTY STATE
ISLAMIC UNIVERSITY (UIN) WALISONGO
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**ZAGHLUL AL-NAJJAR'S INTERPRETATION ABOUT EARTH ROTATION
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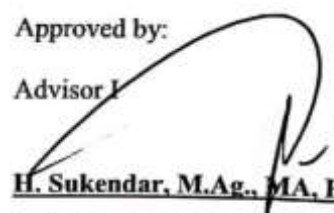
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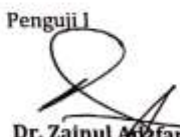
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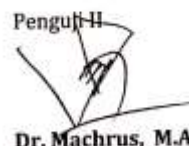
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MOTTO

“Watch your thoughts, for they become words. Watch your words, for they become actions. Watch your actions, for they become habits. Watch your habits, for they become your character. And watch your character, for it becomes your destiny. What we think, we become.” **Margaret Thatcher**

DEDICATION

This final project is dedicated to:

My dear parents,

Mr. Casmito and Mrs. Carmiati, who can be my heroes, respectful for you, there's a day without love and remember you, big thanks have been my supporter in every time and condition. Thanks for your presence in my life and for always giving great prayer and contributions to my educational process.



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there is H. Sukendar, M.Ag., MA, PhD.



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My classmates, FUPK 13 as my great friends and big family who have given me sweet experiences, love, and support

.

TRANSLITERATION

Guidelines for transliteration Arabic-Latin letters in the writing of this guided by the "transliterate Arab-Latin guidelines" issued by the Joint Decree of Minister of Religious Affairs and the Minister of Education and Culture of R.I., number: 158/1987 and number 0543b/ U/ 1987. Dated January 22, 1988, as follows :

Arab Alphabet	Name	Latin alphabet	Name
ا	Alif	Not symbolized	Not symbolized
ب	Ba	B	Be
ت	Ta	T	Te
ث	Sa	Ś	Es (with the above point)
ج	Jim	J	Je
ح	Ha	Ḥ	Ha (with the under point)
خ	Kha	Kh	Ka and ha
د	Dal	D	De
ذ	Zal	Ž	Zet (with the above point)
ر	Ra	R	Er
ز	Zai	Z	Zet
س	Sin	S	Es

ش	Syin	Sy	Es and ye
ص	Sad	Ṣ	Es (with the under point)
ض	Dad	Ḍ	De (with the under point)
ط	Tha	Ṭ	Te (with the under point)
ظ	Dza	Ẓ	Zet (with the under point)
ع	"ain	...	Inverted commas above
غ	Gain	G	Ge
ف	Fa	F	Ef
ق	Qaf	Q	Qiu
ك	Kaf	K	Ka
ل	Lam	L	El
م	Mim	M	Em
ن	Nun	N	En
و	Wau	W	We
ه	Ha	H	Ha
ء	Hamzah	...`	Apostrophe
ي	Ya	Y	Ye

Long	ا or وى ي	Ā ū ī
Doubled	ي و	iyy (final form ī) uww (final form ū)
Diphthongs	وَ يَ	Au or aw Ai or ay
Short	َ َ ُ	A i u

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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The final project, titled “ZAGHLUL AL-NAJJAR’S INTERPRETATION ABOUT EARTH ROTATION IN SURAH AL-ANBIYA’ VERSE 33 (Study of *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur’an al-Karīm*),” was compiled to fulfill the conditions of obtaining a Bachelor Degree (S.1) from Theology and Humanities Faculty of the Walisongo Islamic State University of Semarang.

In preparing this final project, the author gets a lot of guidance and suggestions from various parties, so the preparation of this final project can be resolved. For this reason, the authors thank:

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In the end, the writing of this final project was done by the writer. However, the authors realize that the writing of this final project is far from perfect. Therefore, constructive criticism and suggestions are the author's hope to correct the paper for future scientific research.

Semarang, September 10th 2021

Author

Atikah Nur Azzah Fauziyyah

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ABSTRACT

One of the scientific cues contained in The Qur'an is about the rotation of the Earth in space. Humans who live on Earth feel that the world is still, not moving an inch. But in truth, the Earth is moving along with other planets and the billions of galaxies in space. Each galaxy has 100 billion stars. How extraordinary this universe. The main problem of this research is how Zaghlul al-Najjar's interpretation of Q.S. al-Anbiya' verse 33 concerning the Earth's movement and rotation and how relevant the interpretation of the movement and rotation of the Earth is to contemporary science. This qualitative research uses library research based on The Qur'an and books of interpretation as primary data sources and other references in books, journals, and secondary data sources. The data collection technique used is document studies. This research was analyzed using the descriptive analysis method. Based on the research results in *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, there's relevance with Copernicus's theory, Kepler's theory, and Ibn Syaair's theory to the occurrence of day and night caused by Earth Rotation. In general, the majority of people only know about the Earth's rotation and revolution. Earth's movement is not only rotation and revolution. There are precession, nutation, slowing of earth's speed, the motion of the transition of the Earth's orbit, the rotational movement of the Earth's orbit, the Earth's circulation movement with the solar system or galaxy, the movement of the Earth's circulation with the remnants of the solar system as a whole in around the galactic centre, as well as the movement of the Earth, solar system, and galaxies.

Keyword: Earth Rotation, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Zaghlul al-Najjar.

CHAPTER I

INTRODUCTION

A. Background

Miracles of al-Qur'an as an announcement about the nature of something can be proven through experimental science in terms of i'jaz. Limited facilities and infrastructure in the early days of Islam mean that The Qur'an could only be confirmed by the end-time ummah, who had discovered the power of technology. *"O jinn and humans, if you can penetrate (cross) the corners of heaven and Earth, then pass, you will not be able to penetrate it except with strength (technology) (Surah ar-Rahman [55]: 33).*¹

Science and technology are two things that cannot be separated; the science which is the source of technology, can provide the possibility for the emergence of new technology, and conversely, technology which is the application of science, can produce more advanced equipment that offers opportunities for science to develop more rapidly.²

In Arabic, physics is called the science of character, because, at the time of the glory of the Muslims, which tried to reveal the nature and behavior of the nature around us under certain conditions, it was realized as stating that the behavior was shown, it shows the character of nature itself.³

¹ Abdul Hamid, *Pengantar Studi al-Qur'an*, Cetakan Pertama, (Jakarta: Prenadamedia Group, 2016), p.2

² Prof. Achmad Baiquni M.Sc., Ph.D., *Al-Qur'an Ilmu Pengetahuan dan Teknologi*, 1995, (Yogyakarta: PT Dana Bhakti Prima Yasa), p. 27

³ Prof. Achmad Baiquni M.Sc., Ph.D., *Al-Qur'an Ilmu Pengetahuan dan Teknologi*, p.17

Because of the human's obligation to know the natural surroundings well, then Allah SWT commands to us in Q.S. Yusuf [10]: 101:

قُلْ اَنْظُرُوا مَاذَا فِي السَّمٰوٰتِ وَالْاَرْضِۙ

Say, "Observe what is in the heavens and Earth." But of no avail will be signs or warners to people who don't believe.

So that humans know the characteristics and behavior of the surrounding nature, which will be a place to live and a source of materials and food for the rest of their lives, Achmad Baiquni uses the word *nazhar* or *intizhar* for the words "*unzhuruu*". According to him, that verse is a command to humans to see something, but just not see with an empty mind, but rather with attention to the greatness and power of God Almighty, and the meaning of the signs phenomena.⁴

Allah SWT created this universe and its contents with complete harmony, regularity, and balance. All of it isn't without the chance, but with *haqq*, where there is a purpose and benefit in its creation. The purpose and benefit is to for the life of creatures on Earth, as well as to guide humans towards faith and devotion to Him.⁵

We believe that The Qur'an is not a psychological book about exact and physics, but the book of guidance of Ershad, the book of Tasyri 'and Ishlah. However, His verses contain signs that are quite deep and complicated in matters of sociology, medicine and anthropology, which show their existence as miracles and revelations of Allah SWT. There are no schools that talk about

⁴ Prof. Acchmad Baiquni M.Sc., Ph.D., *Al-Qur'an Ilmu Pengetahuan dan Tekonologi*, p.20.

⁵ Lihat: Quraisy Shihab, *Tafsir al-Misbah*, vol. 13, Jakarta: Lentera Hati, 2001, hlm. 21-22 Lihat juga: Tantowi Jauhari, *Jawāhir fī Tafsīr al-Qur'ān al-Karīm*, juz 21, Mesir: Musthofa al-Baaby al-Khaaly wa Awladuhu, tt. p. 16.

the natural sciences. At the same time, the actual scientific theory required by The Qur'an was not known at all in his time. Even the secrets of science have only been opened in recent times.⁶

Every human being feels calm when doing activities on Earth, as if the Earth is still in its place. State However, Nicolaus Copernicus stated that the Sun is the center of the solar system. The Earth and the other planets simultaneously revolve around the Sun in certain orbits in the form of an epicycle (spherical). This theory was be delivered by Nicolas Copernicus in the 14th century A.D. to refute the Geocentric theory that the church has held. This theory is actually not purely Copernican's thinking. Still, the development of the heliocentric theory was delivered by Aristarchus of Samos in the 4th century B.C. but did not get support at that time.⁷

That indicates that the Earth's moving, rotate, or motion. Earth revolves in its orbit. In addition, it is necessary to explore further the movement of the Earth in space.

Among the proofs of Allah's power with His beautiful creation is the change, that is, the alternation of day and night. The astronomical phenomenon is significant for life on Earth to all organisms include humanity. This phenomenon has been mentioned many times in The Qur'an *al-Kariim*.⁸

This verse of Allah includes things that should be considered to be used as evidence of the greatness of their Creator. The night is separated from the day, and the day is separated from the night. The earth's rotation around its axis from

⁶ Dewi Murni, "Tafsir dari Segi Coraknya Lughawi, Fiqhi, dan Ilmiy", dalam *Jurnal Syahadah*, Vol. VIII, No. 1, April 2020, p. 85-86

⁷ Slamet Hambali, *Pengantar Ilmu Falak*, Banyuwangi: Bismillah Publisher, 2012, p. 182-184

⁸ Slamet Hambali, "Astronomi Islam dan Teori Heliosentris Nicolaus Copernicus", dalam *al-Ahkam Jurnal Pemikiran Hukum Islam*, Volume 23, Nomor 2 Oktober 2013, p.231

west to east is called the earth rotation. The Sun appears on the eastern horizon and sets on the western horizon very regularly and beautifully.⁹

Every day we look at the Sun at the eastern horizon, then the Sun moves to get longer. Its position will be higher until it attains the most elevated rank of the day at midday. After that, the Sun continues its journey, its place in the sky is getting longer will be lower, and we see it sinking in the horizon at dusk.¹⁰

This phenomenon that we usually feel is called a change of day and night. Their rotation is caused by the rotation of the Earth on its axis and the traveling of the Sun in its orbit. As a result of the rotation of this Earth, part of the Earth will face the Sun so that it is exposed to the light it emits. This part will be light, and it is mentioned with the day or noon.¹¹

Conversely, the part that is back to the Sun is not exposed to its rays, so this region will be dark, and at that time, its region is mentioned with night. A phenomenon like this will happen thoroughly in accordance with the rotation and Earth's revolution.¹²

In al-Qur'an surah al-Anbiya verse 33, which means: *"And it is He who created the night and the day and the sun and the moon; all [heavenly bodies] in orbit are swimming."*

The verses of the Al-Qur'an in Q.S al-Anbiya [21]: 33 should be a motivation for humans, especially Muslims, to pay attention and learn the phenomenon of alternating day and night, to increase confidence in the truth

⁹ Slamet Hambali, "Astronomi Islam dan Teori Heliosentris Nicolaus Copernicus", dalam *al-Ahkam Jurnal Pemikiran Hukum Islam*, p.231

¹⁰ Abdur Rachim, *Ilmu Falak*, Cetakan Pertama, (Yogyakarta: Liberty, 1983), p. 1

¹¹ Lajnah Pentashihah al-Qur'an Badan Litbang dan Diklat Kementerian Agama RI, *Tafsir Ilmi Penciptaan Jagad Raya dalam Perspektif Al-Qur'an dan Sains*, (Jakarta: Lajnah Pentashihan Mushaf al-Qur'an, 2012), p. 88

¹² Lajnah Pentashihah al-Qur'an Badan Litbang dan Diklat Kementerian Agama RI, *Tafsir Ilmi Penciptaan Jagad Raya dalam Perspektif Al-Qur'an dan Sains*, p. 88

and greatness of the power of Allah SWT, and give benefits to humans to organize their daily life.

The verse implies that Allah SWT created the alternation of day and night, the Sun, and the moon, all referred to as celestial objects. Even though the number of celestial objects is not only that but more than it. The process of alternating day and night involves the Earth. It is necessary to know more about the movements of the Earth that occur in the universe to reveal His greatness. In addition, in this verse, The Qur'an uses the word of *yasbahuuna*, which means swimming.

Therefore, the author feels the need to do a pre-research by analyzing the verse according to the interpreter. Then the author tries to reveal the reality of changing day and night without the rotation of the Earth. This phenomenon would never have occurred. This has implications for human life.

The author feels the need to do a pre-research by analyzing the verse from the perspective of Zaghul al-Najjar. Then the author tries to reveal the earth's rotation based on two aspects of the assessment, namely from the aspect of interpretation and modern science.

B. Research Questions

Based on the background of problems, the question has been appointed as the main topic of this final project. The main issues mentioned are:

1. How is Zaghul al-Najjar's interpretation of the Earth rotation in Q.S al-Anbiya' [21]: verse 33?
2. How is relevant of Zaghul al-Najjar's interpretation of the dynamics of modern science development?

C. Purpose of The Research

1. To find out Zaghlul al-Najjar's interpretation of the Earth rotation in Q.S al-Anbiya' verse 33.
2. To find out the relevance of Zaghlul al-Najjar's interpretation to the dynamics of modern science development.

D. Benefit Theory

1. Theoretically

Theoretically, the author hopes that this research will add to the treasure of Islam, especially in the study of Ushuluddin Science, so it can be a reference for continuing to develop Islamic scholarship.

2. Practically

Practically, so that we can know how the process of changing day and night takes place because the occurrence of this phenomenon is an implication of Earth Rotation, the Earth rotation also has other implications. Every celestial body that circulates in its orbit moves or circulates according to its trajectory.

E. Literature Review

After conducting a study, the author finally found several readings that were relevant to the research with the title that the author was going to do, including:

1. Miftakhul Hasanah's final project (2020) IAIN Surakarta, Faculty of Ushuluddin and Da'wah with the title (Studi Kitab *al-Jawaahir fii Tafsir al-Qur'aan al-Kariim* dan Buku *De Revolutionibus Orbium Coelestium*). This final project discusses the Earth that revolves around the Sun, as well as the changes of day and night that occur due to the rotation of the Earth based on the perspective of Tanthawi Jauhari and Copernicus.

2. Journal is written by John M. Wahr, Department of Physics and Cooperative Institute for Research in Environmental Sciences, Campus Box 390, University of Colorado, Boulder, Colorado 80309, with the title The Earth Rotation.
3. Journal written by Tri Wahyuningsih and Adella Safitri with the title Malam sebagai Waktu Panjang dalam Perspektif al-Qur'an. This journal discusses the occurrence of day and night as a result of the Earth's rotation. The night is a longer time than the day, which is used to rest and worship.
4. Journal is written by Slamet Hambali with the title Astronomy Islam dan Teori Heliocentris Nicolaus Copernicus. This journal describes the concept of Heliocentricity proposed by the Greek philosopher Aristarchus. However, this theory is still a hypofinal project and is contrary to the opinion of Aristotle. The Heliocentric theory replaces the Geocentric theory, which has been believed for centuries. Then Nicolaus Copernicus wrote the book *De Revolutionibus Orbium Coelestium*, which discussed the heliocentric theory. According to Ahmad Mustafa al-Maraaghi in his interpretation that the Heliocentric theory is part of the miracle of The Qur'an.

As a basis for reference are the verses of The Qur'an, which explain the phenomenon of alternating day and night. As for other sources needed in discussing this final project, namely, *al-Mu'jam al-mufahras li al-Fazh al-Qur'an al-'Azim* by Muhammad Fuad Abd al-Baqi', tafsir al-Qur'an: *Tafsir Tafsir al-Ayat al-Kauniyyah fi al-Qur'an al-Karim* by Zaghlul Najjar, and several Arabic dictionaries; Dictionary of *al-Munawwir*, *Lisan al-'Arab*.

Based on some of the literacy that the author describes above, the difference between the previous works and the final project that the writer will examine can be seen. This final project complements the literacy around the

phenomenon of Earth Rotation and the other movement of Earth.

F. Framework Theory

1. Scientific Interpretation

According to Yusuf Qardhawi, the essence of i'jaz 'ilmi in The Qur'an is just a rhetorical miracle, which has no contradiction between the verses of The Qur'an that were revealed 24 centuries ago with various contemporary scientific discoveries, and some have even state al-Qur'an globally.¹³

At the golden peak of Islamic civilization during the Abbasid era, the linguistic sciences, philosophy, and science were codified. Likewise, with the fiqh schools and kalam genre. A very advanced development was also felt in translating classic works from pre-Islamic civilizations such as Greece, Persia, and India. It was during this phase of civilization that various methods and schools of interpretation of The Qur'an emerged. In addition to finding oriented interpretation styles such as fiqhi, kalami, balaghi, and isyari/sufi, even philosophy, it is also found the scientific interpretation.¹⁴

According to Husain al-Dhahabi, what is meant by tafsir 'ilmi is a style of interpretation that uses scientific nomenclature in interpreting The Qur'an while trying to bring out a new modern science of closeness. Meanwhile, Qardhawi appeared with a slightly different editorial: tafsir 'ilmi is an interpretation that adopts several modern scientific disciplines as a tool in interpreting divine verses. This means that all non-religious sciences in the world are free to analyse The Qur'an scientifically. In general, it can be

¹³ Armaningsih "Studi Tafsir Saintifik: *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm* Karya Syekh Tantawi Jauhari", *Jurnal at-Tibyan*, Vol. I, No. I, 2016), p. 97

¹⁴ Armaningsih, "Studi Tafsir Saintifik: *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm* Karya Syekh Tantawi Jauhari", p. 98

said that the scientific interpretation or interpretation is a modern interpretation style closely related to modern scientific theories.¹⁵

2. Earth Rotation

Earth Rotation is the Earth's rotation on its axis, which ends at the north and south poles. Besides from the rotation of the Earth on its axis from west to east for 24 hours, the Sun, moon, and stars are visible from east to west. And because of that, there's the daily motion of the Sun. Every day the Sun rises from the eastern horizon, then moves higher up to the upper culmination point and gradually leaves the point Z culmination. Finally, the Sun sets on the western horizon, and the Sun goes to the lower culmination point at the destiny point and eventually heads to the rising point.¹⁶

The Earth Rotation around its axis takes place in 23 hours 56 minutes 4,091 seconds, while long of the time mentioned day and night 24 hours, so it's 4 minutes longer. Therefore 4 minutes is roughly $\frac{1}{360}$ of the 23 hours 5 minutes 4,091 seconds, then in 4 minutes, the Earth rotates $\frac{1}{360}$ of one revolution or 1^{0.17}

People since ancient times used night and day as a measure of time because the clock was unknown at that time. Only signs in nature can be used as markers of time.¹⁸

¹⁵ Armaningsih, "Studi Tafsir Saintifik: *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm* Karya Syekh Tantawi Jauhari", p. 99

¹⁶ Rahmatiah HL, "Urgensi Pengaruh Rotasi dan Revolusi Bumi terhadap Waktu Shalat", *Elfalaky: Jurnal Ilmu Falak* Vol.1, No.1, 2017 (Makassar: UIN Alauddin, 2017), p. 63

¹⁷ Saadoe'ddin Djambek, *Waktu dan Djidwal Penjelasan Mengenai Perdjalanannya Bumi, Bulan, dan Matahari*, (Jakarta: Tintamas), p. 10

¹⁸ Lajnah Pentashihah al-Qur'an Badan Litbang dan Diklat Kementerian Agama RI, *Tafsir Ilmi Penciptaan Jagad Raya dalam Perspektif Al-Qur'an dan Sains*, (Jakarta: Lajnah Pentashihan Mushaf al-Qur'an, 2012), p. 91

G. Research Methode

The method means the mode or rule of accomplishing. Methodology implies a system of regulations and methods applicable to research. It is basically connected with principles and techniques to be followed to collect data, information, and material for a given research project. This research will use a method as follows:

1. Type and Approach of Research

This research is qualitative research. This paper is a research effort carried out from the library on the between Earth Rotation in The Qur'an (scientific interpretation). As the focus of research and test subject, this is library research; the data or materials needed to complete the study comes from the library like books, encyclopedias, journals, documents, and magazines.

2. Data Sources

In this research, the researcher uses information and explanation that can help the researcher obtain data. As for the data, the source is divided into the primary source of data and secondary source data.

a. The Primary Data Source

The primary data source is the factual data or derived data from the first source.¹⁹ According to the title "The Earth Rotation in Scientific Interpretation: A Study of *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'ān al-Karīm*", so, the primary data source of this research is The Qur'an and

¹⁹ Hadari Nawawi dan Mimi Martini, *Penelitian Terapan*, Gajah Mada University Press, Yogyakarta, 1996, p. 216-217.

Tafsīr al-Āyāt al-Kauniyyah fī al-Qur’ān al-Karīm by Zaghlul al-Najjar.

b. The Second Data Source

Other sources are obtained for primary sources or data that are usually documentation, intangible or report data mentioned with the second data source. The secondary source is supporting data for the primary source. Books, the internet, dictionaries, newspapers, and magazines are secondary sources in this research.²⁰

The data collection methods used in this study are the method of documentation study. This method were used in this study. It is qualitative research in the form of research literature by documenting secondary and primary data. Here in after study also collects data in articles and other texts associated with the object being studied as a comparison.

c. Data Analysis Methode

The method of analysis used in this study is to use the scientific interpretation analysis model. The author looks for the meaning of words in various commentaries regarding the alternation of day and night, describes them, then explain that Earth Rotation causes that phenomenon in The Qur’an. After that, it analyzes them so that conclusions can be drawn and found out of the box from this phenomenon, especially in Q.S al-Anbiya [21]: 33.

²⁰ Saifuddin Azwar, *Metodologi Penelitian*, Pelajar Offset, Yogyakarta, 1998, p. 91.

H. Writing Order

Systematics is the most crucial thing in research because the system serves as a connecting tool to state an outline of each sequential chapter. The result of this research will be written with this systematic discussion in the following chapters:

CHAPTER I: INTRODUCTION

The first chapter is an introduction that leads to the following chapters, and it is necessary to inform substantially about the subject matter to be studied, the purpose of the research, benefit theory, literature review to see the research position on the theme to what extent and why this research should exist and the research methodology. Used, what analysis method will be used and why the analysis method is applied to the object of research which will then be implemented in the following chapters, especially the third and fourth chapters, and the systematic discussion.

CHAPTER II: THEORETICAL BASIS

The second Chapter this chapter provides information about the theoretical basis for the object of research as contained in the final project title. The origin of this theory includes the approach method to be used in research, the description of the meaning of the Earth Rotation, changed day and night, which will be described in general, and in detail will be presented in the next chapter related to the processing and analysis of data. Furthermore, there're explanations of al-Qur'an interpretation in general, scientific interpretation in particular, and sains theory about Earth rotation.

CHAPTER III: DATA PRESENTATION

The third chapter this chapter is a description of the results of a complete

study of the biography of Zaghlul al-Najjar, the book of *Taf̣ṣr al-Āyāt al-Kauniyah fī al-Qur’ān al-Karīm*, and Zaghlul al-Najjar's interpretation of the verses of the Earth rotation.

CHAPTER IV: ANALYSIS

The Forth chapter, this chapter is a discussion of the data that has been stated in the previous chapter, namely the third chapter to be analyzed using a predetermined method, whether the data is in accordance with the existing theoretical basis or not. If it is not appropriate, it is necessary to state the factors that support it and vice versa. This chapter discusses Zaghlul al-Najjar's thought about Earth rotation and the correlation with contemporary scientific.

CHAPTER V: CLOSING

The fifth chapter is closing. The chapter includes conclusions from the discussion of the previous chapters, then some suggestions and hopes that aim to add insight to this final project.

CHAPTER II

AL-QUR'AN'S INTERPRETATION AND SCIENCE OF THE QUR'AN

A. Al-Qur'an's Interpretation

1. Definition of *Tafsīr*

The word "tafsir" originally meant "explanation" or "appearance of meaning". Ahmad Ibn Faris (w. 395 H), a linguist, explains in his book, *al-Maqāyīs fī al-Lughah*, there are three words of the word of tafsir fa-sin-ra' contain the meaning of "openness and clarity", from this, the word *fasara* (فسر) is similar to the word *safara* (سفر). It's just, the first word contain the meaning that can be reached by the mind, while the second word, namely *safara*, shows material and sensory things.

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The patron of word *tafsīr* (تفسير), which is taken from the word

²¹ M.Quraish Shihab, *Kaidah Tafsir Syarat, Ketentuan, dan Aturan yang Patut Anda Ketahui dalam Memahami Ayat-ayat al-Qur'an*, Cetakan ke-empat, 2019, (Tangerang: Lentera Hati), p.8-9

“fasara” (فسر) means “sincerely opening” or “repeatedly making efforts to open”, so that it means the seriousness and repeated efforts to open what is closed or explain what is abstruse or complex from the meaning of something between vocabulary.²²

Experts delivered various formulations about the meaning of "Al-Qur'an's Interpretation". One of the short meaning, but quite comprehensive, definitions of The Qur'an's interpretation is the explanation of the meaning of Allah's words according to human ability.

The interpretation or explanation was born from the earnest and repeated efforts of the interpreter to take *istinbath* (find meanings in the text of The Qur'an) and explain the abstruse or vague verses according to the ability and inclination of the interpreter.²³

2. Interpretation Research Method

The word the method comes from the Greek "methods", which means "method" or "way". In English, this word is written "method", and Arabic translates it as "tariqat" and "manhaj". In Indonesian usage, the word means: “an orderly way of thinking carefully to achieve a goal (in science and so on); a systematic way of working to facilitate the implementation of an activity to achieve the specified purposes.”²⁴

The word “tafsir” comes from Arabic; it's *fassaara*, *yufassiru*, *tafsiiran*, which means explanation, understanding, and details. In

²² M.Quraish Shihab, *Kaidah Tafsir Syarat, Ketentuan, dan Aturan yang Patut Anda Ketahui dalam Memahami Ayat-ayat al-Qur'an*, p.8-9

²³ M.Quraish Shihab, *Kaidah Tafsir Syarat, Ketentuan, dan Aturan yang Patut Anda Ketahui dalam Memahami Ayat-ayat al-Qur'an*, p.8-9

²⁴ Nasruddin Baidan, *Metode Penafsiran al-Quran*, (Yogyakarta: Pustaka Pelajar, 2002), 54.

addition, interpretation can also mean *al-idlah wa al-tabyīn*, that's explanation and description. Imam al-Zarqani said that interpretation is a science that discusses the content of The Qur'an both in terms of understanding the meaning or meaning as desired by Allah SWT according to the level of human ability. Furthermore, Abu Hayyan, as quoted by al-Suyuti, said that interpretation is a science in which there is a discussion about how to pronounce the pronunciations of The Qur'an with the meaning and the laws contained therein.²⁵ However, "tafsir" also means the product of interpretation or interpretation of literature. So the method of interpretation is the way to interpret the verses of The Qur'an. The following are the types of interpretation research methods:

a. Tahlili Interpretation

The word of tahlili comes from the Arabic word, that's *hallala-yuhallilu-tahfilan* which means to parse or analyze. With this method, a interpreter will reveal the meaning of each word and the arrangement of words in detail in every verse it passes, In order to understand the verse coherently, with a series of verses around it without turning to other verses related to it, except to provide a better understanding of the verse.²⁶

In this method, the interpreter will present an explanation using an approach and trend that is in accordance with the opinion he adopts. The approach used can be a language approach, ratios, history or signs. Examples of exegetical literature compiled with this method

²⁵ Abuddin Nata, *Metodologi Studi Islam*, (Jakarta: Raja Grafindo Persada, 2011), p. 209-211.

²⁶ Abuddin Nata, *Metodologi Studi Islam*, p. 209-211.

include: al-Thabari Interpretation and Tafsir Ibn Kathir Interpretation.²⁷

b. Tafsir Ijmali

The Ijmali method is to explain the verses of The Qur'an in a concise but comprehensive manner, in popular language, easy to understand and easy to read. The systematic writing of this method follows the arrangement of the verses in the Mushaf.²⁸

Ijmali's interpretation doesn't have room/opportunity for the interpreter to express their opinions in detail, but they are presented in a simple and general manner so that listeners and readers seem to still hear The Qur'an like hear and reads the real of al-Qur'an. Although an actually, they hear the interpretation of The Qur'an.²⁹

Ijmali interpretation has advantages and disadvantages. The advantages of this method of interpretation are it is practical and easy to understand, free from israiliyyat interpretation, and familiar with the language of The Qur'an. The disadvantages of this interpretation method are it makes the instructions of The Qur'an partial, and there is no room for an adequate analysis.³⁰

The interpreter mentions a long series of verses of The Qur'an, or a group of short verses of The Qur'an, and then mention the meaning generally without so long or short explanation. In this, he

²⁷ Kusroni, "Mengenal Ragam Pendekatan, Metode, dan Corak dalam Penafsiran al-Qur'an", dalam *Jurnal Kaca Jurusan Ushuluddin STAI AL FITHRAH*, Vol. 9, No. 1, 2019 (Surabaya: STAI Al-Fithrah), 2019, p. 93

²⁸ Malik Ibrahim, "Corak dan Pendekatan Tafsir al-Qur'an", dalam *Jurnal Sosio-Religia*, Vol. 9, No. 3, Mei 2010, p. 645

²⁹ Malik Ibrahim, "Corak dan Pendekatan Tafsir al-Qur'an", p. 645

³⁰ Malik Ibrahim, "Corak dan Pendekatan Tafsir al-Qur'an", p. 646

tries to relate the text of The Qur'an with the meaning that's express these meanings by occasionally mentioning the text of The Qur'an that relates to those meanings. The book of interpretation that uses this method is Tafsir Jalalain by al-Suyuti and al-Mahalli.³¹

c. Tafsir Muqarrin

Tafsir Muqarrin is an effort which's doing by the interpreter to understand one or more verses and then comparing them with other verses that have closeness or similar themes but have different editorials, or have similar editorials but have different meanings, or compare them with the text of the Prophet's hadith, the words of the companions, and tabi'in. Included in the realm of Muqarrin's interpretation is to compare it, or to compare between one interpretation book with the other interpretation book to know the identity of the style of the book of interpretation.

Muqarrin Interpretation can also be a comparison of texts across heavenly books (like The Qur'an with the Bible/Bible, Taurat or Zabur).³² The great example of this method is *Method of Interpretation of The Qur'an (Metode Penafsiran al-Qur'an)* by Dr. Nashiruddin Baidan.³³

From the explanation above, it is clear that the study realm of Muqarrin's interpretation is very wide, there are so many objects of study, and the types or models are also diverse. In this case, it can be classified into 4 (four) models or types, namely:

³¹ Kusroni, "Mengenal Ragam Pendekatan, Metode, dan Corak dalam Penafsiran al-Qur'an", p. 94

³² Kusroni, "Mengenal Ragam Pendekatan, Metode, dan Corak dalam Penafsiran al-Qur'an", p. 94-95

³³ Mochammad Nor Ichwan, *Tafsir 'Ilmiy Memahami al-Qur'an Melalui Pendekatan Sains Modern*, p. 121

- 1) Comparison verses between verse of The Qur'an (*muqaranah baina al-ayāt al-Qur'an*). In this model, the researcher conducts an in-depth study of verses that have similar editorials but differ in meaning or have similar meanings/themes but have different redaction. Or it can be like a study of verses that outwardly contradict meaning. In this case, the researcher must refer to the scholars' interpretations, then look for the problem solving, provide support or criticism, or look for similarities in *dilaalah* or the wisdom behind these similarities.
- 2) Comparison verse a verse of The Qur'an and the text of the Prophet's hadith In this model, the researcher compromises between the verses of The Qur'an and the hadith texts, which outwardly seem contradictory.
- 3) Comparison of opinions among interpreters. In this model, the researcher does an in-depth study of one interpreter's interpretation and then compares it with other interpreters across madhhab, genre, scientific backgrounds, and across ages (classical mid-modern-contemporary).
- 4) Comparison the text of The Qur'an with the texts of the heavenly book. In this model, the researcher does an in-depth study of one theme in The Qur'an and then compares it with similar themes in the heavenly books (Injil/Bible, Taurat, Zabur). In this process, the researcher tries to find the location of the advantages of The Qur'an (in its capacity as the last Prophet's treatise book) from the previous heavenly books, looking for some additions and deviations to the teachings as well as in the stories of the previous heavenly books.

Or we can also look for data that aims to complement or interpret The Qur'an and the heavenly books.³⁴

d. Maudhu'i Interpretation (Thematic)

One of the research models of The Qur'an is the thematic research model. Even this thematic study has become a trend in the development of modern-contemporary interpretation. As a consequence, a researcher will take a certain theme (*maudhu'*) in The Qur'an. This departs from the assumption that in The Qur'an, there are various themes or topics, both related to issues of theology, gender, fiqh, ethics, social, education, politics, philosophy, art, culture and so on. However, these themes are scattered in various verses and letters.³⁵

This interpretation method is the interpretation of explaining several verses of The Qur'an regarding a certain title/theme, taking into account the orderly sequence of the revelation of each verse, according to the reasons for its descent which are explained with various kinds of information from all aspects and compared with other explanations. Various correct sciences that discuss the same topic/theme, making it easier and clearer the problem because The Qur'an contains many kinds of topics that need to be discussed in a *maudhu'i* manner so that the discussion can be more complete and perfect.³⁶

Mursyi Ibrahim al-Fayumi divides this method into two; *the first* is the interpretation of the verse, which is to explain a verse as a whole

³⁴ Kusroni, "Mengenal Ragam Pendekatan, Metode, dan Corak dalam Penafsiran al-Qur'an", p. 94-95

³⁵ Kusroni, "Mengenal Ragam Pendekatan, Metode, dan Corak dalam Penafsiran al-Qur'an", dalam *Jurnal Kaca Jurusan Ushuluddin STAI AL FITHRAH*, Vol. 9, No. 1, 2019 (Surabaya: STAI Al-Fithrah), 2019, p. 93-96

³⁶ Mochammad Nor Ichwan, "Tafsir 'Ilmiy Memahami al-Qur'an Melalui Pendekatan Sains Modern", p. 121-122

by explaining the contents of the verse, either general or specific and explaining the relationship between one theme and another. So that the verse looks like to be a very solid and careful discussion; *second*, thematic interpretation, which is to collect several verses of The Qur'an that have the same theme and then discuss them in detail.³⁷

According to Dr. Al-Farmawy, the originator of this interpretation method was Sheikh Muhammad Abduh. The main ideas were given by Sheikh Mahmud Saltut, then introduced concretely by Prof. Dr Sayyid Ahmad Kamal al-Kumi. Al-Kumi introduced this type of interpretation method in his book entitled *al-Tafsīr al-Maudhu'i*.³⁸

The features of this type of interpretation method are: *first*, it is the shortest and easiest way to explore the guidance of The Qur'an compared to other interpretation methods; *secondly*, interpreting verse by verse as the best way of interpretation turns out to be prioritized by the maudhu'i method; *third*, can answer the problems of human life in a practical and conceptual manner based on the instructions of The Qur'an; *fourth*, by collecting various verses on certain issues, the height of *fashah* and *balaghah* can be realized; *Fifth*, with the study of maudhu'i verses that seem contradictory, can be brought together and reconciled in a harmonious whole.³⁹

3. Interpretation Style

Islah Gusmian mentioned in his book that interpretation's style is "nuance of interpretation, that's the dominant space as the point of view

³⁷ Mohammad Nor Ichwan, *Tafsir ' Ilmiy Memahami al-Qur'an Melalui Pendekatan Sains Modern*, (Jogjakarta: Penerbit Menara Kudus Jogja, 2004), p. 121-122

³⁸ Mohammad Nor Ichwan, *Tafsir ' Ilmiy Memahami al-Qur'an Melalui Pendekatan Sains Modern*, p. 121-122

³⁹ Mohammad Nor Ichwan, *Tafsir ' Ilmiy Memahami al-Qur'an Melalui Pendekatan Sains Modern*, p. 123

of a work of interpretation.⁴⁰ So the interpretation's style means a special nuance or colour that colours an interpretation. When an interpreter explains the contents of al-Qur'an according to the ability, and knowledge horizon of the interpreter, a variety of interpretations is relevant diversity of scientific disciplines that be the intellectual basis of the interpreter.⁴¹

There are differences of opinion among scholars in classifying the styles of interpretation, 'Abd al-Majīd 'Abd al-Salām al-Muḥtasib is of the view that the interpretive style (*ittijāhāt al-tafsīri*) today can be divided into three categories, namely: salafī, 'aqlī tawfīqī, and 'ilmī.⁴²

In contrast to 'Abd al-Majīd 'Abd al-Salām al-Muḥtasib, 'Abd al-Ḥayy al-Farmāwī classifies the style of interpretation into seven categories, there are *ma'tsur*, *ra'yi*, *fiqh*, *sufi*, *falasifah*, *'ilmī*, *al-adab wa al-ijtimā'ī*. In line with Quraish Shihab, he concluded that the pattern of interpretation is divided into six parts, there is the style of language literature, scientific interpretation, the style of philosophy and theology, the style of fiqh or law, the style of Sufism, the literary style of social culture, the scientific style, and the *adabi Ijtimai* style.⁴³

The interpretation of the modern era, according to al-Dzahabi in his book *al-Tafsīr wa al-Mufasssirun*, can be grouped into four patterns, including scientific style, madhhab style group, style or interpretation containing kufr thoughts, interpretation of social and ethical patterns.⁴⁴

⁴⁰ Islah Gusmian, "Khazanah Tafsir Indonesia", p. 231

⁴¹ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", dalam *Jurnal HIKMAH*, Vol. XV, No. 2 (2019), p. 256

⁴² Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 256

⁴³ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 256-257

⁴⁴ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 257

For a more detailed discussion of the patterns of interpretation, as follows:

a. *Fiqhi* Interpretation (Legal Style)

The style of *fiqh* interpretation means the style of interpretation that is coloured with legal verses. The pattern of interpretation of *fiqh* means the pattern of interpretation that is coloured with legal verses. This pattern substantially contains issues surrounding *fiqh* such as prayer, zakat, fasting to contemporary issues. The style of *fiqhi* interpretation is also known as the interpretation of the *ahkam* verse, which contains laws regarding *fiqh*, both mandatory, circumscribed, *makruh*, permissible, and forbidden.⁴⁵

This *fiqhi* style of interpretation began to emerge because of the many *fiqh* issues in the community. While the Prophet SAW had died and the laws produced by qualified scholars such as the companions and *tabi'in* were very limited, the scholars who were qualified in their fields both in terms of science and piety to do so *ijtihad* by making a book of interpretation. Then emerged the Imams of the Schools who were qualified in their fields, such as Imam Hanafi, Imam Malik, Imam Shafi'i, Imam Ahmad ibn Hanbal. This style of *fiqhi* varies according to schools and sects.⁴⁶

b. *Falsafy* Interpretation (Philosophy Style)

The definition of the style of philosophical interpretation is an attempt to interpret the Qur'an, which is associated with philosophical problems, or it can also be interpreted by interpreting the verses of the Qur'an by using philosophical theories. Meanwhile, according to

⁴⁵ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 257

⁴⁶ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.

Muḥammad Husain al-Žahabi, philosophical interpretation is a way of interpreting the verses of the Qur'an based on philosophical thoughts or views, such as *tafsir bi al-ra'yi*. In this case, the verse of the Qur'an functions more as a written basis for thinking, not thoughts that justify the verses of the Qur'an.⁴⁷

Philosophers who try to reconcile religion and philosophy have two ways that they go, there are: first, by interpreting the texts of the Qur'an to conform to the opinions of philosophers or by adjusting the texts of the Qur'an with the opinions of philosophers to be compatible. Second, explaining the texts of the Qur'an with philosophical opinions or theories, in other words, philosophical opinions that control the texts of the Qur'an.⁴⁸

From the first group was born the book *Mafātīḥ al-Ghaib* by Fakhr al-Dīn al-Rāzī. As for the second group, al-Žahabī said: "We have not found and have never heard of a philosopher - who glorifies philosophy - who authored a complete book of interpretations of the Qur'an, What was found from them was nothing more than their partial understanding of the Qur'an which was scattered in their books."⁴⁹

c. Scientific Interpretation (Scientific Style)

Modern science-based interpretation of the Qur'an called *al-tafsir al-'ilmy* is one form or style of interpretation of the Qur'an. In terms of language (etymologically), *al-tafsir al-'ilmy* comes from two words: "al-tafsir" and "al-'ilmy" (Al-Bustani, Fuad Ifram, 1986) attributed to

⁴⁷ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.262-263

⁴⁸ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 263

⁴⁹ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.263

the word *'ilm* (science), which means scientific. So, in the language, al-*'ilmy* interpretation means scientific interpretation.⁵⁰

Meanwhile, according to the term (terminology), the definition of al-*'ilmy* interpretation can be understood by some of the experts. Muhammad Husayn al-Dzahaby in his book *al-Tafsīr wa al-Mufasssīrūn*, for example, the meaning of *al-tafsīr al-'ilmy* is an interpretation carried out by adopting (using an approach) scientific theories in revealing the content of the verses of scientific. Al-Qur'an and trying earnestly to explore various scientific disciplines and philosophical views from these verses. Meanwhile, Abd Al-Majid Al-Salam Al-Muhtasib in his book, *Iittihajat al-Tafsīr fī al-Ashr al-Hadith*, says that al-tafsir al-*'ilmy* is an interpretation carried out by his interpreter to find the suitability of the expressions in verses of the Qur'an against scientific theories (scientific discoveries) and trying to explore various scientific problems and philosophical thoughts (Abd al-Salam al-Muhtasib, Abd al-Majid, 1973).⁵¹

If the verses of the Qur'an were looked for carefully, it would be found 854 times the word *'ilm* is mentioned in various forms and meanings, including as a process of achieving knowledge and the object of knowledge. It is known that none of the verses of the Qur'an contradicts science. On the contrary, many verses of the Qur'an support and emphasizes the importance of science. One of the proofs of the truth of the Qu'ran is science and the various disciplines it implies.

It is proven that there are many verses of the Qur'an that talk

⁵⁰ Putri Maydi Arofaturun Anhar dkk, "Tafsir Ilmi: Studi Metode Penafsiran Berbasis Ilmu Pengetahuan Pada Tafsir Kemenag", dalam *Jurnal Prosiding Konferensi Integrasi Interkoneksi Islam dan Sains*, Volume 1, September 2018, p. 110

⁵¹ Putri Maydi Arofaturun Anhar dkk, "Tafsir Ilmi: Studi Metode Penafsiran Berbasis Ilmu Pengetahuan Pada Tafsir Kemenag", *Prosiding Konferensi Integrasi Interkoneksi Islam dan Sains*, Volume 1, September 2018, p. 110

about scientific facts that were not known at the time of its descent. Still, they only proved to be true in the midst of the development of science, such as (a) the theory of the *expanding universe* (the expanding cosmos) (QS. ad-Dzaariyat [51]: 47), (b) the Sun is a luminous planet, while the moon is a reflection of the Sun's light (QS. Yunus [10]: 5), the Earth moves around the Sun (Q.S.: 27: 88), (c) green leaf substance (chlorophyll) which plays a role in converting solar radiation energy into chemical energy through the process of photosynfinal project, thus producing energy (Q.S. Yāsīn [36]: 80). In fact, the term al-Qur'an *al-syajar al-akhddhar* (green tree) is actually more correct than the term chlorophyll (green leaf) because the substance is not only found in the leaves, but in all parts of the tree, and (d) that humans were created from a small portion of male sperm and after fertilization (fertilization) is located in the uterine wall (Q.S. at-Thāriq [86]: 6 and 7; al-'Alaq [96]: 2).⁵²

In Indonesia, there are also figures who often interpret The Qur'an with a scientific approach and scientific discoveries, such as Baiquni, a physicist from Solo, who is famous for his book *al-Quran: Science and Technology (Ilmu Pengetahuan dan Teknologi)*, which Dana Bhakti Prima Yasa first published in 1994. Prof, Achmad Baiquni, M.Sc, Ph.D, that's his full name, with a number of his works in the field of the Qu'ran and scientific interpretations that have inspired several other Qur'an researchers. This includes Agus Mustofa, a nuclear science graduate from UGM. He has given birth to many controversial works, including, *It turns out that Actually Adam was Born (Ternyata Adam Dilahirkan), Adam Wasn't Expelled from*

⁵² Muhammad Syahrial Razali Ibrahim, "Tafsir 'Ilmi: Kajian Metodologis atas Ayat-ayat Kauniyah dalam Tafsir Al-Misbah Karya Muhammad Quraish Shihab", dalam *Jurnal SOSIO-RELIGIA*, Vol. 9, Edisi Khusus Mei 2010, p. 33

*Heaven (Adam Tidak Diusir dari Surga), Actually The Afterlife is not Eternal (Ternyata Akhirat Tidak Kekal), There is no Grave Punishment (Tak Ada Azab Kubur), and so on.*⁵³

d. Tarbawy Interpretation (Educational Style)

As for the pattern of *tarbawy's* interpretation, it is more oriented to verses about education (*al-Tarbawy* verse). There are differences with other interpretation styles, the *tarbawy* interpretation books are relatively few. Some of the commentaries that include using this style include, *Namadzij Tarbawiyah min al-Qur'an al-Karim*, by Ahmad Zaki Tafahah (1980 M), *Nadzariyat at-Tarbiyyah fi al-Qur'an wa Tatbiqatuha fi Ahd al-Rasul 'Alayh al-Shalatu wa al-Salam*, by Dr. Aminah Ahmad Hasan (1985M), and *Manhaj al-Qur'an fi at-Tarbiyyah*, by Muhammad Syadid (1412H/1991 M).⁵⁴

e. Moral Interpretation (Attitude Style)

The *akhlaqy* interpretation is a style of interpretation whose the interpretation is oriented to verses about morality and uses a moral science approach. Therefore, the interpretation of moral verses is often found in the various interpreters, especially the *bi al-Ma'sur* interpretation genre and the *tahlili* interpretation book. However, it does not mean that there is no interpreters that specifically works on verses about morality. When traced to books that specifically discuss morals, it seems that they are still very rare. Still, on the contrary, the interpretation of verses about morality in *tahlili* interpreters includes

⁵³ Muhammad Syahril Razali Ibrahim, "Tafsir 'Ilmi: Kajian Metodologis atas Ayat-ayat Kauniyah dalam Tafsir Al-Misbah Karya Muhammad Quraish Shihab", p.34

⁵⁴ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.276

so much. Among the books of interpreter is an-Nasafi's interpretation, by Ali al-Barakat Abdullah bin Ahmad bin Mahmud al-Nasaf.⁵⁵

f. I'tiqady Interpretation (Theological Style)

Theological interpretation is a form of interpretation of the Qur'an, which is not only written by sympathizers of certain theological groups, but furthermore, this interpretation is an interpretation used to defend the theological school's point of view. The interpretation of this model talks more about theological themes than prioritizing the main messages of the Qur'an.⁵⁶

Like the discussion developed in the literature of kalam (Islamic theology), this interpretation is full of sectarian content and defences against theological notions, which are the main references for the interpreter. The verses of the Qur'an, which seem to have different connotations from one another, are often used by theological groups as the basis for their interpretation. It is verses like these that provide opportunities and have the potential to be just tools for theological understanding. The categorization of verses used by the Qur'an itself, such as *muhkam* and *mutasyabbih*, is a theoretical source of different theological interpretations built on beliefs.⁵⁷

g. Sufism Interpretation

The word Sufi is etymologically expressed as *isim mushtaq*

⁵⁵ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.276

⁵⁶ Ahmad Izzam, *Metodologi Ilmu Tafsir*, p.204.

⁵⁷ Ahmad Izzam, *Metodologi Ilmu Tafsir*, p.204.

from the word "shuf", which means fleece. The majority of Sufis often use clothing made of rough sheepskin as a manifestation of their *zuhud* nature. The word of *mushtaq*, indirectly rejects the origin of other Sufi words such as *suffah*, which means the corner of the mosque used by the Companions of the Prophet SAW to live there, that means the front row before Allah SWT, *shafwah* means the chosen people of Allah SWT. , and so forth. Another opinion states that this word Sufi is not a *mushtaq* but is a *laqab* (designation) for them.⁵⁸

Terminologically, the word Sufi is defined as a person who undergoes the ritual of Sufism. Sufism contains three meanings; first, something related to morality. Second, something related to worship and its forms. Third, something related to *ma'rifah* and *musyahadah*.⁵⁹

This style of Sufi interpretation directs its interpretation with the science of Sufism. Thus, interpreting the Qur'an with an explanation that is different from its textual content, namely in the form of signs that can only be expressed by those who are travelling to Allah SWT (*suluk*). However, it is possible to combine textual interpretation and sign interpretation.

The style of Sufi Tafsir is classified into two parts; the first part of Nazarī Sufi interpretation is a Sufi interpretation based on theories and philosophies. Second, the Sufi *isyari* interpretation is that interpreting the verses of the Qur'an is not the same as the external meaning of the verses because it is adapted to the hidden

⁵⁸ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 259

⁵⁹ Ibnu Khaldun, *Muqaddimah Ibn Khaldun*, p. 522

signs that appear on the performers of Sufistic rituals. Their interpretation may be under the external meaning of the interpretation. According to the Sufis, behind the meaning of *zahir*, there is an inner meaning. They attach importance to this inner meaning."⁶⁰

h. *Al-'Adabi al-Ijtima'i* Interpretation

The definition of the *al-'adabi wa al-ijtimā'ī* interpretation, this style consists of two words, the words *al-'Adabi* and *al-Ijtimā'ī*, *al-'Adabi mashdar* (infinitive) from the verb ادب, which means politeness, good character and literature. It is called '*adaban* because it invites the commendable and forbids the bad. The term *al-'Adabi* is also translated into cultural literature as for the word *al-Ijtima'i*, which is rooted in letters ج, ح, and ع, and words of جمع meaning to unite something, اجتماع or also interpreted by society. Terminologically, the style of *al- adabi wa al-ijtimā'ī* interpretation is is an interpretation that is oriented towards cultural and social literature.

Abdul Hay al-Farmāwi defines the style of interpretation of *al-'Adabi wa al-ijtimā'ī*, a style of interpretation that emphasizes the explanation of the verses of The Qur'an in 1) terms of editorial accuracy, 2) then arranges the contents of these verses in an editor with the main objective of explaining the purposes of The Qur'an, 3) the interpretation of the verse is related to the *sunnatullah* that applies in the society.⁶¹

Among the books of interpretation that use the fiqhi style are:

⁶⁰ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p. 260

⁶¹ Danial, "Corak Penafsiran al-Qur'an Periode Klasik Hingga Modern", p.275

- a. *Aḥkām al-Qur’ān karya al-Jaṣṣāṣ* (w. 370 H) Hanafi sect.
- b. *Aḥkām al-Qur’ān karya al-Kayyā al-Ḥarrāsī* (w. 504 H) Syafi’i sect.
- c. *Al-Jāmi’ li Aḥkām al-Qur’ān karya al-Qurṭubī* (w. 671 H) Maliki sect.
- d. *Kanz al-’Irfān fī Fiqh al-Qur’ān* by Miqdār al-Suyūṭī sect al-Imāmī al-Isnā ‘asyarī.⁶²

i. Linguistic Style

Linguistic style, also known as *lughawi* interpretation, rests on linguistic rules. This interpretation is not infrequently thick with *bayānī* reasoning. It is deductive, where the position of the Quranic text becomes the basis of interpretation, and language becomes the analytical tool. This style can be based on the science of *qawā’id* and *balāghah*. Muin Salim said that linguistic interpretation style or *lughawi* interpretation is a style of interpretation that explains the *Qur’an al-Kariim* through semiotic and semantic interpretations, which include etymological (origin of words), morphological (lexical/*sharf* arrangement), lexical (meanings of words). Which is not influenced by other forms), grammatical (analysis of *nahwu* structures) and rhetorical (aspects of artistic meaning/*balaghah*). When viewed from this understanding, an interpreter who wants to use a language interpretation style must master the language of the Qur’an, namely Arabic with all its scientific branches, which are related to *nahwu*, *balaghah*, and literature.⁶³

Among the Interpretation Books that use language styles are:

⁶² Danial, “Corak Penafsiran al-Qur’an Periode Klasik Hingga Modern”, p.275

⁶³ Danial, “Corak Penafsiran al-Qur’an Periode Klasik Hingga Modern”, p. 265

- a. *Al-Bahr al-Muhīth fī al-Tafsīr* by Abu Hayyan alAndalusy.
- b. *Al-Kasysyāf* by al-Zamakhsharī (w. 538 H).
- c. *Al-Naẓm al-Qur’ānī* by ‘Abd al-Qāhir.
- d. *Anwār al-Tanzīl wa Asrār al-Ta’wīl*, by Imam al-Baidhowi.
- e. *Tafsīr al-Qur’ān al-Karīm*, by Quraish Shihab

B. Qur’anic Science/Scientific Interpretation

1. Definition of Scientific Interpretation

Scientific interpretation consists of two words, namely *Tafseer* and *‘ilmi*. Epistemologically, interpretation comes from the phrase *al-fasr*, which means information (Ibn Manzur 2012, 11:180). *Al-Tafsiir* means explaining, explaining, or elaborating (al-Mu’jam al-Wasit 2004: 688). In terminology, according to al-Zarkashi (1988, 1:13), interpretation is a scientific discipline to understand The Qur’an, explain the meanings in the Qur’an, and issue laws and secrets in the Qur’an. According to Ibn ‘Ashur (1997, 1:11), interpretation is a science that talks about the explanation of the meanings of the verses of the Qur’an and what benefits can be taken from these words succinctly or broadly. According to al-Zarqani (1998, 2:7), Tafsir is the science that discusses the Qur’an in terms of its *dilalah* (which relates to understanding its meaning) desired by Allah SWT according to the ability of humans themselves. Meanwhile, the meaning of interpretation according to al-Khalidi (2010: 24) is the science that completes the understanding of the Qur’an, explains its meanings, issues its rulings and eliminates impossibility and ambiguity regarding His verses.⁶⁴

⁶⁴ Nor Syamimi dkk, “Pendefinisian Semula Istilah Tafsir ‘Ilmi Re-definition of the Term Tafsir ‘Ilmi (Scientific Exegesis of al-Qur’an)”, dalam *Jurnal Islamiyyat*, Vol.38, No. 2, 2016 p.150

The definition of '*ilm*' epistemologically comes from the word '*ilm*', which means knowledge, science, knowledge and information (al-Mu'jam al-Wasit 2004: 624; al-Miftah 2008: 1202; Ibn Manzur 2012, 10: 263). In addition, according to al-Jurjani (1983), *al-'ilm* is a belief that is absolutely in harmony with the true nature (al-Jurjani 1983: 155). Ahmad Bazli (2014: 66), in his study, uses the term '*ilm*' with the intention of experimental science and what is related to it rather than the *tabii* science found in *al-kawn* (creation) such as physics, geology, biology, oceanography, and astronomy. Rather, '*ilm*' includes all knowledge. In connection with that, the definition of '*ilm*' is different based on individual differences, which provide this understanding according to their respective fields of study.⁶⁵

Tafsīr 'ilmi or scientific exegies is a style of interpretation of the Qur'an that uses a scientific theory approach to explain the verses of the Qur'an. *Tafsīr 'ilmi* is intended to explore scientific theories and philosophical thoughts from the verses of the Qur'an. It is also intended to justify and compromise scientific theories with the Qur'an and aims to deduce scientific theories from the verses. The verse of the Qur'an itself.⁶⁶

In terms, scientific interpretation is a new term in the discipline of Qur'anic interpretation and was not used at the beginning of the history of recitation of interpretation (al-Sharqawi 1972: 44-47; al-Muhtasib 1973: 245; Jansen 1974: 35-39 ; Ansari 2001: 91-104; Selamat et al. 2012: 55). In the context of using the term 'scientific interpretation', the form of difference follows a specific language. Arabic uses the word '*ilmi interpretation*' or '*ilmi tajribi*' interpretation, English with the term

⁶⁵ Nor Syamimi dkk, , "Pendefinisian Semula Istilah Tafsir 'Ilmi Re-definition of the Term Tafsir 'Ilmi (Scientific Exegesis of al-Qur'an)", p.151

⁶⁶ Rubini, "Tafsir 'Ilmi", dalam *Jurnal Komunikasi dan Pendidikan Islam* Vol.5, No. 2, Desember 2016, (Yogyakarta: STAIMS, 2016), p.93

scientific exegesis or *scientific interpretation* and Malay as scientific interpretation or scientific interpretation.⁶⁷

The next Arabic term is the interpretation of '*ilmi tajribi*' used by al-Rumi (1997). He disagrees with the term '*ilmi*' interpretation refers to an interpretation based on such knowledge. He argues that '*ilmi*' refers to knowledge in the general sense of the word. As an alternative, he named it the interpretation of '*ilmi tajribi*' to distinguish it from other schools of interpretation. He describes the interpretation of '*ilmi tajribi*' as *ijtihad* carried out by the interpreter in distinguishing and explaining the relationship between the Kauniyyah verse in the Qur'an and scientific discoveries in the form of experiments to highlight the miracles of the Qur'an which are sourced from Allah SWT and are suitable for all ages. and place (al-Rumi 1997: 545-550).⁶⁸

Most Western scholars use the term scientific exegesis in English to refer to the interpretation of 'scientific'. These scholars include Jansen (1974), Wood (1989), Ansari (2001), Iqbal (2010), Mir (2004) and Elshakry (2008). In addition, some scholars use the term *scientific interpretation*, namely Bustami (2000) and Amir et al. (2012). However, this study did not find a specific definition that refers to *these Western scholars' scientific exegesis or scientific interpretation*. They focus more on highlighting the relationship between science and verses that contain scientific elements in the Qur'an.⁶⁹

The definition put forward by Abu Hajar and Mazlan also shows similarities, namely, the scientific interpretation is an interpretation that explains the verses of the Qur'an based on theories and scientific discoveries that are fixed and have been proven to be true. This discovery

⁶⁷ Nor Syamimi dkk, p. 151

⁶⁸ Nor Syamimi dkk, p. 151

⁶⁹ Nor Syamimi dkk, p. 151-152

was not known at the time of the decline of the Qur'an. This proves that the Qur'an is sourced from Allah SWT and is not a creation of the Prophet Muhammad (Abu Hajar 1991: 66; Mazlan 1998: 26). This definition shows that both of them want to bring scientific discoveries closer to the Qur'an to see and highlight the miracles of the Qur'an that various scientific discoveries known today have actually been mentioned in the Qur'an since 14 centuries ago.⁷⁰

2. History of Scientific Interpretation

The seeds of the emergence of 'ilmy interpretation already existed in the heyday of Islam and science, namely in the Abbasid dynasty, especially during the Caliph Al-Ma'mun (d. 853 AD). Because the Abbasid dynasty was the center of world science and culture, Caliph Al-Ma'mun was ordered to translate scientific books from various languages, mainly from Greek into Arabic. From there began the bookkeeping of science and religion books and their classification.⁷¹

The figure who most steadfastly supports the idea of translating scientific books is al-Ghazali (d. 1059-1111 AD), who at length in his books *Ihya 'Ulumu al-Dīn* and *Jawāhiru al-Qur'ān*. So al-Ghazali is considered a pioneer of scientific interpretation. Furthermore, Fakhrurddin ar-Rāzi as a pioneer of the flow of scientific understanding because he often used the scientific knowledge of his time in his interpretation work *Mafātihu al-Ghaib*.⁷²

⁷⁰ Nor Syamimi dkk, p. 153

⁷¹ M. Quraish Shihab, *Membumikan Al-Qur'an, Fungsi Dan Peran Wahyu Dalam Kehidupan Masyarakat*, (Bandung: PT Mizan Pustaka, 1992), p.154

⁷² M. Quraish Shihab, *Membumikan al-Qur'an, Fungsi dan Peran Wahyu dalam Kehidupan Masyarakat*, (Bandung: Penerbit Mizan, 2007), p.101.

According to Islamologist Rotraud Wieland, the scientific interpretation approach was also used by Muhammad al-Iskandarani, a doctor around 1880 who wrote two books that allegedly "revealed the secrets of The Qur'an regarding the heavenly and earthly bodies, animals, plants, and substances." metal", this step was followed by other thinkers with a bolder agenda, especially Tanthawi Jauhari who in 1923 produced a phenomenal work that has ever existed with the scientific values of The Qur'an, which is equipped with pictures and tables.⁷³

Modern science has moved toward deism of belief that God started the universe, but then let it run its course. If it is analogous to a clock, God's role is only limited to a mere watchmaker. After that he just stays from a distance and lets the clock run itself until it breaks. God retired deusotiosus because God has no work anymore. In contrast to the goal of Islamic science to know the true nature of things as given by God. It also aims to unify the laws of nature, the interrelationship of all its parts and aspects as a reflection of the unity of the divine principle. Modern science and Islam have had a long debate. Suppose the epistemology of modern science is derived from scientific logic and rationality as well as observation and experimentation. In that case, even modern science ignores and denies it as a metaphysical, spiritual, and aesthetic aspect of the universe. Islamic science is sourced from Allah's revelation and sunnah, which includes all sciences, including modern science with scientific clues in it.⁷⁴

In the Qur'an, there are no less than 800 verses of the Kauniyyah in

⁷³ Muhammad Ulin Nuha, *Penafsiran Zaghlul al-Najjar tentang Api di Bawah Laut dalam QS. ath-Thūr Ayat 6*, Skripsi, Semarang: UIN Walisongo, 2016.

⁷⁴ Agus Purwanto, *Ayat-ayat Semesta Sisi-sisi Al-Quran yang Terlupakan*, p. 193

the count of Muhammad Ahmad al-Ghamrawi. In fact, according to Zaghlul al-Najjar, there are 1000 original verses and hundreds of others that are indirectly related to the phenomena of the universe. The scientific interpretation of hundreds of verses of the Qur'an with the help of modern science and science has been responded to differently by the experts of the Qur'an.⁷⁵

The history of the development of interpretation from the past until today did not occur suddenly, but gradually and evolutionarily. In order to understand the history of the development of understanding, we must do periodic divisions or classifications because each period displays specific characteristics in the development of interpretation. According to Harun Nasution, the history of Islamic civilization is divided into three chapters, classical (650-1250 AD), medieval (1250-1800 AD), and modern (since 1800).⁷⁶ Until now, there have been many scientists who have classified the development of interpretation, which in essence is as follows:

a. Classical period interpretation

The classical period is divided into two: *first*, from 650-1000 c.e. as the advent, growth, and development of early Islamic civilization. *Second*, out of the 1,000-1250 m known as the age of disintegration on the control of Daulah Abbasid and exist only as a symbolic force. These days, there are many autonomous small kingdoms of Islam.⁷⁷

⁷⁵ Zaghlul Raghīb al-Najjar, *Tafsīr al-Ayat al-Kauniyyah fī al-Qur'ān al-Karīm*, (Beirut: Maktabah al-Tsarwah al-Dauliyyah, 2001), Jilid IV, Cet. II, p. 71

⁷⁶ Lihat Akhmad Taufik dkk, *Sejarah Pemikiran dan Tokoh Modernisme Islam*, (Jakarta: Raja Gafindo, 2005), p. 5-8

⁷⁷ Syukran Afffani, *Tafsir al-Qur'an dalam Sejarah Perkembangannya*, p. 7-9

It can be said that the growth of interpretation has been since the Qur'an itself was revealed. Because as soon as the Qur'an was exposed to a man named Muhammad, since he has also interpreted it in a simple sense, namely understanding and explaining it to his friends. He is the first interpreter (*awwal al-mufasssir*) to decipher the Qur'an and present it to his people.

Early in the 1-2 AH/7-8 AD century at the time of the Prophet, companions, and tabi'in. In this era, the interpretation of the Qur'an is formative (formation), and epistemic is theocentric (*al-'aql al-lahutanil al-'aql al-bayani*), quasi-critical reasoning (there is a critical space but the truth is tied to authority). certain, namely the Prophet, companions, tabi'in; a kind of "as if critical"). This period is known as the "salaf generation"

The interpretation of this classical period includes the interpretation of the time of the Prophet and his companions and the interpretation of the Qur'an during the tabi'-tabi'i period. So, the interpretation of the classical period is the interpretation that emerged and developed in the Prophet until the emergence of the understanding of the bookkeeping period (the end of the Umayyad Daulat period or the beginning of the Abbasid Daulat period), namely the 20th century 1 H to the 2nd century H. Al-Qattan divides the period of interpretation into three stages. : first, the performance of the Qur'an at the time of the Prophet and his companions. Second, the understanding of the Qur'an at the time of the Tabi'in. Third, the interpretation of the Qur'an during the codification (book keeping).⁷⁸

⁷⁸ Syukron Affani, *Tafsir al-Qur'an dalam Sejarah Perkembangannya*, Cetakan pertama, Februari 2019, (Jakarta: Kencana), p. 7-9

b. Interpretation of The Middle Period

The middle period is also divided into three; the first, from 1250 to 1500 AD, the so-called epoch of decline marked by the attacks of Genghis Khan and his descendants from Mongolia. In 1491/1492 AD, the last most crucial power of Spanish Muslims in Granada fell to the Catholic ruler King Ferdinand II after eight centuries (since 94 H / 712 AD) ruled Spain. In 1609 AD/1017 H, Islam disappeared entirely from the land of Andalusia. Second, from 1500 to 1700 AD. This period can be called the second heyday of Islam, represented by the Ottoman Empire in the West, the Safavids in Persia, and the Moghuls in India. Third, from 1700 AD to 1800 AD, the decline of the three kingdoms finally resulted in the population of Napoleon Bonaparte from France to the land of Egypt.

The Middle Ages, namely in the 2nd to 3rd centuries H until the 13th century H (9-19 A.D.) which took place after the tabi'in generation or the tabi' al-tabi'in period when the interpretation was started to be recorded (*'ushuur al-tadwiin*/ period of codification of interpretation). The period of codification of interpretation cannot be separated from the historical stages of the codification of Hadith. At least the beginning of this period can be marked during the reign of the pious Umayyad king, namely 'Umar bin 'Abd al-Aziz, who ruled in 99-101 H, which is recorded as pioneering the official codification of the Prophet's Hadith. Tafsir al-Qur'an in this era tends to be affirmative (strengthening and affirming understanding), conservative (preserving knowledge), sectarian (contained in a specific

understanding), and ideological (carrying a specific understanding).⁷⁹

After 1800 AD, the history of Islamic civilization entered a new modern chapter. In this new current chapter of the history of Islamic culture, the dynamics of Islamic civilization are much more complex than the previous chapters, especially when the political concept of the nation-state became a phenomenon of world nations. Although it has its phenomenal phases, the motives for the historical development of the interpretation of The Qur'an can be connected with the history of Islamic civilization. In general, the periodization of the interpretation of the Qur'an is divided into three clusters: classical, medieval, and contemporary. The interpretation of these three clusters is to facilitate the marking, although the phenomena in each stage are not simple.

c. Interpretation of Contemporary Period

The development of contemporary interpretation cannot be separated from its development in modern times. One of the adages that have always been the jargon of contemporary commentators is that the Qur'an is a holy book of *sahih li kulli zamān wa makān*. The scriptures are universally applicable, transcending time and place experienced by humans. Although the classical commentators also recognize this adage, the understanding of the contemporary commentators is different from that of the classical commentators.

There are several different methods of interpretation used by traditional Interpreters, most of whom tend to interpret using the *tahlili* (analytical) method, so in contemporary times, interpretation is

⁷⁹ Syukron Affani, *Tafsir al-Qur'an dalam Sejarah Perkembangannya*, Cetakan pertama, Februari 2019, (Jakarta: Kencana), p. 7-9

carried out using the *ijmali* (global) method, *maudhu'i* (thematic) or interpretation of verses. Certain but by using modern approaches such as semantics, gender analysis, scientific, semiotics, hermeneutics, etc.⁸⁰

Modern-contemporary happened when the medieval era concluded the end in the 20th century. *Tafsīr al-Qur'ān* in this era is aware of certain shortcomings from the interpretation of the previous era, which is considered incompatible with the needs and developments of the times. Therefore, the phenomenon of interpretation in the contemporary era is critical-reformative (reformation) of the methods and approaches of medieval interpretation of the Qur'an.⁸¹

3. Scientific Interpretation Controversy

Seeing the development of interpretation with the scientific style that is growing rapidly in the scientific world, of course, it does not escape the various polemics that characterize it and the pros and cons in it. The scholars who support scientific interpretation are as follows:

Imam al-Ghazali (d. 505 H) who encouraged the writing of scientific interpretations, namely interpretations that sought to understand the holy book of the Qur'an scientifically and rationally. This is stated in the book *Jawāhirul Qur'an* which states that the interpretation of several verses of the Qur'an needs to use several disciplines, such as astronomy, medicine, and so on. In the book *Ihya 'Ulūmu al-Dīn*, he quotes Ibn Mas'ud, who said: "If we want to know the knowledge of ancient and

⁸⁰ Al-Qattan, *Studi Ilmu-ilmu Quran*, p. 333-342.

⁸¹ Syukron Affani, *Tafsir al-Qur'an dalam Sejarah Perkembangannya*, Cetakan pertama, Februari 2019, (Jakarta: Kencana), p. 7-9

contemporary scientists, we must reflect on the contents of the Qur'an."

Nevertheless, Imam al-Ghazali failed in realizing the main points of his thoughts on scientific interpretation. This ideal was only recognized a century later by Imam Fakhrudin al-Rāzi (d. 606. H) in his book *Mafātiḥu al-Ghaib*. Fakhrudin al-Rāzi has applied science that is scientific and thought to understand the verses of The Qur'an. So some scholars commented, "Fakhruddīn al-Rāzi has explained everything in his commentary, except the interpretation itself."⁸²

4. Validity of Scientific Interpretation

Interpretation using the scientific method is arguably still new, and of course, it is debated by many Quranic studies activists. This debate revolves around the validity of the interpretation results. The most representative explanation of the relationship between science and the Qur'an is a quote from the view of Muhammad bin Abdullah al-Mursi who considers that the Qur'an contains science, both classical and modern science. In addition to the knowledge of the contents of the Qur'an, which was revealed to the Prophet Muhammad and conveyed to his companions, this knowledge is the secret of Allah SWT. Then it was conveyed by the tabi'in in the next period who could not explain the secret content of the Qur'an so that the explanation of the Qur'an at that time was limited to the dimensions controlled by the tabi'in.⁸³

Science continues to develop as proof of the Qur'an always gets sharp criticism. One of them is Abu Ishaq al-Shatibi, who rejects an

⁸² Muhammad Ulin Nuha, *Penafsiran Zaghlul al-Najjar tentang Api di Bawah Laut dalam QS. ath-Thūr Ayat 6*, Skripsi, Semarang: UIN Walisongo, 2016.

⁸³ Abdul Mustaqim, *Epistemologi Tafsir Kontemporer*, (Yogyakarta: PT. LKiS Printing Cemerlang: 2010), p.83.

interpretation model using science because Abu Ishaq argues that various kinds of science such as geology, astronomy, and other types of science have been known by the Arabs. The Qur'an came down to select and sort out science, which is not by Islam.⁸⁴

For the existing polemics, the results of interpretation using the scientific method require a validity check. There are three theories of truth as a measure of the validity of interpretation to fulfil this,, namely coherence, correspondence, and pragmatism. First, the coherence theory says that the reality of an interpretation is seen from previous propositions, and there is consistency in applying the methodology developed by the Interpreter. Second, the correspondence theory says that an interpretation is considered correct if there is a match with the scientific facts in the field. Third, pragmatism theory says that an interpretation is categorized as valid if the interpretation is practically able to provide practical solutions to social problems.⁸⁵

In other words, the interpretation is not measured by different interpretations, but by the extent to which interpretation can provide solutions to the problems humans face today. Therefore, models of interpretation of theological or legal verses that tend to be exclusive and less humanistic to adherents of other religions may be irrelevant considering that human problems in the current era such as poverty, unemployment, ignorance, and natural disasters cannot only be resolved by adherents of one religion only but need to cooperate in symbiotic mutualism with adherents of other religions.

⁸⁴ Maqbilqis Firizeqisfi, *Makhluk Hidup dari Air Perspektif Zaghlul Najjar: Tafsir Ilmi Atas Ayat-Ayat Penciptaan*, Skripsi, Surabaya: UIN Sunan Ampel, 2020.

5. How does Scientific Interpretation Work

Some requirements have been agreed upon together by the cleric tafsir to interpret the Qur'an. A mufassir must meet these requirements:

- a. Understood Arabic along with its linguistic codes such as grammar, syntax, etymology, and morphology. Furthermore, mufassir also had to understand rhetoric which included *ma'ani* science, *macaws* and *badi'*. A good understanding of *ushul fiqh* also befits a mufassir. Without mastery of the sciences, there is very much possible interpretation and error in the interpretation.
- b. Know and understand well the main points of The Qur'anic *ulum*, such as Qiraat science, *asbaab an-Nuzul*, *naskh mansukh* science, *muhkam mutasyabbih*, *makki madani*, and so on. Without a good understanding of the *ulum al-Qur'an*, there will be a possibility that the interpreters cannot explain the meaning and meaning of the verse properly.
- c. It was knowing the development of science and technology to be able to compete and find new theories contained in The Qur'an.
- d. It is understanding the hadith of the Prophet and all of its aspects, because the hadith has an important role in revealing the meaning of the verses of The Qur'an.
- e. Know and understand well the historicity of the revelation of The Qur'an.⁸⁶

6. Scientific Signs as I'jaz in The Qur'an

The main reason that encourages Interpreters to write their interpretations with a scientific or scientific style is that in addition to the

⁸⁶ Abdul Basid, "Kaidah Kualifikasi Intelektual Mufassir", dalam *Jurnal Al-Yasini* Vol. 03 No. 01 Edisi Mei 2018, p.30-31

many verses of The Qur'an, which both explicitly and implicitly command humans to explore knowledge, they also want to know the dimensions of the miracles of The Qur'an in the field of science. modern science. On the other hand, the traditional interpretation of the verses of The Qur'an may not be able to provide a satisfactory understanding of God's scientific messages and also not be able to meet the needs of the times that are developing so rapidly.⁸⁷

Miracles or i'jaz are etymologically derived from al-i'jaz, which means weak or incapable. I'jaz is a mashdar (abstract noun) from the word *a'jaza*, which means different and superior. In terms of the scholars, Miracles are extraordinary things accompanied by challenges and cannot be matched. The culprit is called *mu'jiz*. Suppose the ability to weaken the other party is very prominent and strong so that it is able to silence the opponent. In that case, it is called *mu'jizah*, which is called and written "miracle" in Indonesian. The addition of ta *marbuthah* at the end of the word *mu'jizah* contains the meaning of *mubalagah* (superlative) or which means "most".⁸⁸

Sometimes other scientific evidence throughout the centuries that add to the meaning are more evident, more profound, and more comprehensive because the Apostle was given *Jawaami'u al-Kaalim* (a small, concise expression, but has many implications), so the depth and breadth of miracles increases as the clarity of the law increases. Nature with a lot of evidence included in its provisions.

The scope of the study of scientific miracles is that every discussion read by The Qur'an and sunnah in any scientific discipline whose nature is not clear and does not allow the confirmation of the

⁸⁷ Mochammad Nor Ichwan, *Tafsir 'Ilmiy; Memahami al-Qur'an Melalui Pendekatan Sains Modern*, (Yogyakarta: Menara Kudus Jogja, 2004), p. 127-128

⁸⁸ M. Quraish Shihab, *Mukjizat al-Qur'an: Ditinjau dari Aspek Bahasa, Isyarat Ilmiah, dan Berita Ghaib*, (Bandung: Mizan, 2004), p. 25

message brought by revelation except to Allah is a field of study of scientific miracles described by contemporary science. So the scope of the study, based on this understanding, is all the fields and dimensions of nature that are mentioned and hinted at in The Qur'an and Sunnah, and allow human science to know its secrets, in addition to other things needed by a researcher to interpret Shari'a texts with the correct interpretation and are not subject to errors—likewise knowing the history and development of science that helps him in explaining the miraculous sides.

7. Implementation of the Integration Paradigm in 'Scientific' Interpretation

Based on the epistemological paradigm described earlier, this section will look critically at the implementation of the integration of The Qur'an and science in *Tafsīr 'Ilmi*. 'Scientific Interpretation: Between Scientific Interpretation and Scientific Interpretation. Scientific interpretation (*at-tafsīr al-'ilmi*/ scientific exegesis) by Muhammad Husain al-Dzahabi is defined as a discussion of aspects of science contained in The Qur'an as well as efforts to uncover various knowledge and thoughts contained therein.⁸⁹

Scientific interpretation is understood as an effort to understand The Qur'an through scientific findings, both inductively and deductively. That's al-Dzahabi's view. Inductively, The Qur'an is placed as the basis for conducting scientific research, or in other languages, the data of The Qur'an is used as primary data. Then the data is proven through scientific research. Deductively, previously scientific research did not depart from

⁸⁹ Faizin, "Integrasi Agama dan Sains dalam Tafsir Ilmi Kementerian Agama RI", in *Jurnal Ushuluddin* Vol. 25 No.1, Januari-Juni 2017, p. 25-26

the verses of The Qur'an; after being scientifically proven, the results of the research were confirmed through the relevant verses of The Qur'an.⁹⁰

This view is an integrative approach, the verses of The Qur'an on the one hand and scientific findings on the other. In principle, this model is not a problem because dynamic science has relevance to the verses of The Qur'an. Although in the end, the truth claims of science are imaged as relative. Both scientists and scholars must argue that scientific interpretation is not to justify the relative truth with absolute truth or scientific interpretation is not to force the tafsir of The Qur'an as if it is by scientific findings.⁹¹

8. Theologian's View of Scientific Interpretation

When viewed from the works born throughout its history, 'ilmi' interpretation has two basic models: scientific exploration and textual legitimacy. The scientific exploration in question is the scientific interpretation that proceeds from the verse described in more detail by taking scientific explanations. Meanwhile, textual legitimacy is a model of scientific interpretation that departs from the explanation of certain scientific theories and then looks for justification or conformity with the selected verse or hadith text. These two models are often done together in work. But in general, the scientific exploration model is a model that appears at the beginning of its history until the next development period. At the same time, the textual legitimacy model appears more in modern times, mainly because of the development of science in the West.⁹²

When viewed from the aspect of the author, the scientific

⁹⁰ Faizin, "Integrasi Agama dan Sains dalam Tafsir Ilmi Kementerian Agama RI", p. 26

⁹¹ Faizin, "Integrasi Agama dan Sains dalam Tafsir Ilmi dalam Tafsir Ilmi Kementerian Agama", p. 26

⁹² Ach. Maimun, "Integrasi Agama dan Sains melalui Tafsir 'Ilmi (Mempertimbangkan Signifikansi dan Kritiknya)", dalam *'Anil Islam: Jurnal Kebudayaan dan Keilmuan Islam*, Vol. 12, No. 1, Juni 2019, p.41

exploration model is generally carried out by commentators or scholars, namely Muḥammad usain al-Zahabi, *al-Tafsīr wa al-Mufasssīrūn*, thinkers with a background in religious knowledge. Therefore, this model appears in the form of works of commentary such as the interpretations of al-Raazii and al-Baiḍaawii. While the scientific legitimacy model is generally carried out by scientists with a scientific background so that the works that appear are more visible as scientific works that are strengthened by sacred texts, not in the form of works of interpretation. A phenomenal example is Maurice Bucaille's *La Bable, le Coran et la science*. This work cannot be called a commentary, because it does not interpret the content of the Qur'an, but the emphasis is on the suitability of the content between scientific theories and existing texts.⁹³

The quite phenomenal interpretation entitled *al-Jawāhir fī Tafsīr al-Qur'an al-Karīm* written by Tanthawi Jauhari is interesting to be presented in this paper. He departed from his interest in the phenomena of natural wonders that exist in the heavens and the earth, as the verses of The Qur'an also talk about these phenomena. According to him, in The Qur'an, 750 verses speak about various sciences and only 150 verses that talk about fiqh clearly. Unfortunately, the attention of Islamic intellectuals to these thoughts is very minimal. On the other hand, the need for knowledge as shown in the verses that talk about animals, plants, heaven and earth also cannot be denied in addition to the need for law and order. etc.⁹⁴

The tendency of scientific interpretation as Tantawi was also carried out by Zaghlul Raghib Muhammad al-Najjar, an Egyptian geologist who received higher education up to master's level at Cairo

⁹³ Ach. Maimun, "Integrasi Agama dan Sains melalui Tafsir 'Ilmi (Mempertimbangkan Signifikansi dan Kritikanya)", p.41-42

⁹⁴ Tantawi Jauhari, *al-Jawahir fī Tafsīr al-Qur'an* (Kairo: Mustafa al-Babi al-Halabi, 1922), Jilid 1, p. 66-67.

University and graduated in 1955 with the title 'Summa Cum Laude'. As the best graduate, he was given the "Baraka Award" for the category of geology. He then earned a PhD in geology from the Walles University of England in 1963. And since 2001, he has been the Chair of the Scientific Miracles Commission of The Qur'an and al-Sunnah at the "Supreme Council of Islamic Affairs" Egypt. Zaghlul is fully convinced that The Qur'an is a book of miracles from the aspect of language and literature, *aqidah-ibadah-akhlaq (tasyri')*, historical information, and no less important from the point of view of scientific cues.

This is strong evidence for scientists today that The Qur'an is truly the word of God that has called on mankind since it was first revealed to stand on a solid foundation. Therefore, according to Zaghlul, we are only allowed to prove the scientific miracles of The Qur'an by utilizing the facts and laws of science which remain unchanged, even though it is possible to add and strengthen that essence in the future.⁹⁵

According to Professor I'jazul Khatib from the University of Damascus, about one-eighth of The Qur'an contained in 750 verses stimulates, admonishes, and encourages Muslims to carry out activities that lead to the development of science.⁹⁶

C. Scientific Theory of Earth Rotation

Earth is the third planet from the Sun, after Mercury and Venus. The diameter of the Earth is about 12,769 km. The average distance between the Earth and the Sun is around 149,597,871 km. This distance in astronomy is called the Astronomical Unit (AU), where 1 AU = 149,597,871 km. The

⁹⁵ Zaghlul Raghīb Al-Najjar, *Tafsīr al-Ayat al-Kauniyyah fī al-Qur'ān al-Karīm*, (Beirut: Maktabah al-Tsarwah al-Dauliyyah, 2001), Jilid IV, Cet. II, p. 42

⁹⁶ Achmad Baiquni, *Al-Qur'an dan Ilmu Pengetahuan Kealaman*, Cetakan Pertama, (Yogyakarta: PT. Dana Bhakti Prima Yasa, 1997), p. 67

Earth-Sun space is not always the same but sometimes far away, sometimes close, according to the position of the Earth on the ecliptic. The Earth revolves around the Sun in an elliptical orbit approaching a circle. The difference between the perihelion point and the aphelion point is about 5,000,000 km. The closest distance (perihelion) of the Earth to the Sun is about 147 million km and the farthest distance (aphelion) of about 152 million km.⁹⁷

Earth Rotation is the earth's rotation on its axis, which ends at the north and south poles. Besides the rotation of the earth on its axis from west to east for 24 hours, the sun, moon, and stars are visible from east to west. And because of that, there's the daily motion of the sun. Every day the sun rises from the eastern horizon, moves higher up to the upper culmination point and gradually leaves the point Z culmination. The sunsets on the western horizon, and the sun goes to the lower culmination point at the destiny point and heads to the rising end.⁹⁸

The Earth Rotation around its axis takes place in a period of 23 hours 56 minutes 4,091 seconds, while long of the time who mentioned day and night 24 hours, so it's 4 minutes longer. Therefore 4 minutes is roughly $\frac{1}{360}$ of the 23 hours 5 minutes 4,091 seconds, then in 4 minutes, the earth rotates $\frac{1}{360}$ of one revolution or 1^{0.99}

People since ancient times used night and day as a measure of time because the clock was unknown at that time. Only signs in nature can be used

⁹⁷ Muhyiddin Khazin, *Ilmu Falak dalam Teori dan Praktik*, Yogyakarta: Buana Pustaka, p.125

as markers of time.¹⁰⁰ The flattening of rotating objects is why the Earth's centre line from pole to pole is smaller than the equator. Not much: three-tenths of a per cent about 40 km. With 24 hours per day, the Earth's rotation speed at the equator is only about 1,600 kilometres per hour.¹⁰¹

The alternation of day and night is proof of Allah's power with His beautiful creation. This has been mentioned many times in The Qur'an *al-Kariim* because remembering this astronomical phenomenon is very important for the life of humankind and other creatures that live on earth. This verse of Allah includes things that need to be considered to be used as evidence of the greatness of its Creator. The night is separated from the day, and the day is divided from the night. As a result of the rotation of the earth around its axis from west to east which is called the earth's rotational motion, the sun appears on the eastern horizon and sets on the western horizon very regularly and beautifully.¹⁰² Earth's motion as described in Q.S an-Naml [27]: 88

*“And you see the mountains, thinking them rigid, 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.”*¹⁰³

Mountains are part of the earth, so if it is said that the mountain is walking as the path of the clouds, then this indicates that the earth is walking as the path of the clouds. Clouds, in this case, are certainly not appropriate if given the essential meaning, namely clouds that become rain. It will follow

¹⁰⁰ Lajnah Pentashihah al-Qur'an Badan Litbang dan Diklat Kementerian Agama RI, *Tafsir Ilmi Penciptaan Jagad Raya dalam Perspektif al-Qur'an dan Sains*, (Jakarta: Lajnah Pentashihan Mushaf al-Qur'an, 2012), p. 91

¹⁰¹ Neil de Grasse Tyson, *Astrofisika untuk Orang Sibuk*, (Jakarta: PT Gramedia Pustaka Utama, 2018), p. 92

¹⁰² Slamet Hambali, “Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus”, dalam *Al-Ahkam Jurnal Pemikiran Hukum Islam*, Vol 23, No. 2, Oktober 2013, p. 231

¹⁰³ Q.S an-Naml (27): 88

the development of modern science if it is given the importance of *majazi*, namely clouds are interpreted as clusters of stars in the sky at night when the sky is clear with no rain and no clouds, the stars look like clouds. In astronomy, it is stated that the earth has four kinds of motion, namely rotation, revolution, precession, and nutation.¹⁰⁴, the Earth does not only make one movement, even five directions at once.

There are four kinds of motion in astronomy, namely rotation, revolution, nutation, and precession. Cloud is defined as a cluster of stars in the sky at night when the sky is clear without rain and without clouds, the stars look like clouds. The Earth does not only make one movement as long as it revolves around the Sun. The five Earth movements are:

1. Rotation

The earth's rotation around its axis takes place in a period of 23 hours 56 minutes 4,091 seconds, while long of the time who mentioned day and night 24 hours, so it's 4 minutes longer. Therefore 4 minutes is roughly $\frac{1}{360}$ of the 23 hours 5 minutes 4,091 seconds, then in 4 minutes the earth rotates $\frac{1}{360}$ of one revolution or $1^{0.105}$

Earth's rotation is the rotation of the earth on its axis, which ends at the north pole and south pole. Besides from the rotation of the earth on its axis from west to east for 24 hours, so that the sun, moon, and stars are visible from east to west. And because of that, there's the diurnal motion of the sun. Every day the sun rises from the eastern horizon then moves higher up to the upper culmination point and

¹⁰⁴ Slamet Hambali, "Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus", p. 233

¹⁰⁵ Saadoe'ddin Djambek, *Waktu dan Djidwal Penjelasan Mengenai Perdjalan Bumi, Bulan, dan Matahari*, (Djakarta: Tintamas), p. 10

gradually leaves the point Z culmination and finally the sun sets on the western horizon and the sun goes to the lower culmination point at the destiny point and finally heads to the rising point.¹⁰⁶

Rotational motion is taken for 23 hours 56 minutes 4 seconds (1 sidereal day) or 24 hours (1 synodic day), namely the movement of the earth around the axis, which has the effect of changing day and night and all celestial bodies or stars are seen around the earth in a circular motion. Twenty-four hours no matter how far away. Second, the motion of revolution, namely the motion of the earth around the sun, which is taken for 365 days 5 hours 48 minutes 45.2 seconds, which has the effect of the sun always moving north and south as far as $23^{\circ} 26' 26''$ from the equator/sky equator as a result of the earth rotates around the sun in an equatorial position / the earth's equator always forms $23^{\circ} 26' 26''$.¹⁰⁷

The earth's axis of rotation does not form a perpendicular angle to the plane of the earth's orbit around the sun. In other words, the earth's equator is not parallel to the plane of the earth's orbit. The Earth's equator forms an angle of 23.5° with the plane of the Earth's orbit. With an angle of 23.5° , the intensity of the sun's light will be received differently on the earth's surface at any time.

The North Pole, also known as the Geographical North Pole or the Terrestrial North Pole, is the point in the Northern Hemisphere where the Earth's axis of rotation ends at this point on the surface. This point is different from Earth's North Magnetic Pole. The South Pole is another

¹⁰⁶ Rahmatiah HL, "Urgensi Pengaruh Rotasi dan Revolusi Bumi terhadap Waktu Shalat", *Elfalaky: Jurnal Ilmu Falak* Vol.1, No.1, 2017 (Makassar: UIN Alauddin, 2017), p. 63

¹⁰⁷ Slamet Hambali, "Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus", p. 233

point where the Earth's axis of rotation ends at its surface, namely in Antarctica.

Earth rotates once in about 24 hours. Earth's rotation slows down a bit over time. Thus, a day now is longer than a day in the past. This is due to the effect of the Moon's tides on the Earth's rotation. Atomic clocks show that modern times are about 1.7 milliseconds longer than they were a century ago. Analysis of astronomical records shows a trend of slowing down by 2.3 milliseconds per century since the 8th century BC.

The earth's rotational speed is $(7.2921150 \pm 0.0000001) \times 10^{-5}$ radians per second. Multiplying by $(180^\circ/\pi \text{ radians}) \times (86,400 \text{ seconds})$ gives 360.9856° , indicating that the Earth rotates more than 360° relative to a fixed star in one solar day. The movement of the Earth along its nearly circular orbit as it rotates around its axis requires the Earth to spin a little more than one revolution relative to the sun. However, it only turns once (360°) close to the Sun. When multiplied by the rad value by the earth's equatorial radius, which is 6,378,137 m (based on the WGS84 ellipsoid calculation), it results in a speed at the equator 465.1 m per second or 1,674.4 km per hour. Some literature states that the rotational speed of the earth's equator is 1,669.8 km / h. It is obtained by dividing the circumference of the earth's equator by 24 hours. However, its use for only one loop without considering the appropriate unit of time must be a sidereal clock. This is reinforced by the increase in the number of sidereal days in an average solar day, 1,002 737 909 350 795, which results in an average equatorial speed given above 1,674.4 km/h.¹⁰⁸

The tangential velocity of the Earth's rotation at a point on Earth can be obtained by multiplying the velocity at the equator by the cosine of the

latitude. For example, the Kennedy Space Center is located at latitude 28.59°N, which gives the speed: $\cos 28.59^\circ \times 1,674.4 \text{ km/h}$ (1,040.4 mph; 465.1 m/s) = 1,470.23 km / o'clock.¹⁰⁹

As for the history of the rotation of the Earth, namely, Among the ancient Greeks who studied at Pythagoras believed in the concept of the rotation of the earth rather than the rotation of the sky. Perhaps the first was Philolaus (470-385 BC), despite his complex system, stating that the earth rotates daily at the centre of the fire. Then Hicetas, Heraclides and Ecphantus in the 4th century BC assumed that the earth was turned but did not show that the world revolved around the sun. In the third century BC, Aristarchus of Samos suggested the sun was central.¹¹⁰

However, Aristotle in the fourth century criticized Philolaus' ideas based on theory rather than observation. He established the concept of a fixed field of stars rotating around the earth. This was accepted by most of those who came after him, in particular Claudius Ptolemy (2nd century AD), who thought a storm would crush the earth if it were rotated.¹¹¹

In AD 499, the Indian astronomer Aryabhata wrote that the spherical earth rotates on its axis every day. The apparent motion of the stars is a relative motion caused by the rotation of the earth. He gives the following analogy: "Just as a man with a boat heading in one direction sees stationary objects on the bank of a river moving in the opposite direction, in the same way, a man in Lanka says the stars are arranged neatly. It seems like moving west.

¹¹¹ Thoha Firdaus dan Arini Rosa Sinensis, "Perdebatan Paradigma Teori Revolusi: Matahari atau Bumi sebagai Pusat Tata Surya?", *Titian Ilmu: Jurnal Ilmiah Multi Sciences Vol. IX No. 1*, 2017, p. 23-28

In the 10th century, some Muslim astronomers said that the Earth rotates on its axis. According to al-Biruni, Abu Sa'id al-Sijzi (circa 1020) invented the astrolabe called al-Zūraqī based on the idea that some of his contemporaries believed "that the motion we see is due to the motion of the earth and not the movement of the heavens". The prevalence of this view is further confirmed by a reference from the 13th century, which states: "According to geometricians, the earth is in a constant circular motion, and what appears to be the motion of the heavens is actually due to the motion of the earth and not the stars. This treatise was written to discuss the possibility, either as a refutation or expressing doubt about Ptolemy's arguments against it. At the observatories of Maragha and Samarkand, the rotation of the earth is discussed by Tusi and Qushji. The statements and evidence they use are similar to those used by Copernicus.

In medieval Europe, Thomas Aquinas accepted the views of Aristotle and rejected the opinions of John Buridan and Nicole Oresme in the 14th century. Nicolaus Copernicus, in 1543 adopted the heliocentric system, and a contemporary understanding of the earth's rotation began to be built. Copernicus showed that if the earth's motion was violent, then the movement of the stars must be much more. He acknowledged the contribution of the Pythagoreans and pointed to an example of relative motion. For Copernicus, this was the first step in establishing a more straightforward planetary pattern in which the sun was the midpoint.

Tycho Brahe produced accurate observations using the work of Copernicus as the basis of a system assuming stationary earth. Kepler had his laws based on Tycho's observations. In 1600, William Gilbert strongly supported the earth's rotation in his treatise on Earth's magnetism. He was able to influence many of his contemporaries, such as Gilbert, who did not

publicly support or reject the earth's motion around the sun, often called "semi-Copernicans". A century after Copernicus, Riccioli debated the rotating ground model due to the lack of observable eastern deflections in falling bodies. This deflection of motion is known as the Coriolis effect. However, Kepler, Galileo and Newton significantly contributed to shaping the theory of the earth's rotation.

Earth rotation causes the length of the day, night, and seasons. Earth's equator is not parallel to the plane of the Earth's orbit around the Sun. Thus there will be a difference in the length of day and night at a specific time.

About half of the Earth's crust is illuminated by the Sun at all times. The area exposed to direct illumination is almost half of the planet. But due to atmospheric and other effects, it can extend the lighting range indirectly. The location of the planet Earth that is directly or indirectly illuminated is only slightly more than half of the Earth's surface.

The hemisphere that experiences daylight at each time change continues as the planet rotates on its axis. The Earth's axis of rotation is not perpendicular to the plane of its inner orbit around the Sun (which is parallel to the direction of the sun's rays), so the length of the daylight period varies from point to point. In addition, since the axis of rotation is relatively fixed compared to the star (the sun), the axis of rotation also moves with the Sun as the centre of the orbit. This creates seasonal variations in the length of the daylight period at most points on the planet's surface.

2. Revolution

Earth's revolution is the movement of the Earth around the Sun. In its revolution, the position of the Earth is tilted about 66.5° to the ecliptic plane so that the ecliptic plane is not parallel to the Earth but forms an angle of 23.5° .¹¹²

The average period of the Earth's revolution is 365 days, 5 hours, 48 minutes, 45.2 seconds which is called a sidereal year. The direction of the earth's revolution is from west to east, counterclockwise.¹¹³

If the Sun is at the top culmination somewhere, then after the Earth has rotated for 23h 56m, the Sun has not reached its culmination point but is still less than 1° . However, as a result of the motion of the Earth's revolution about the Sun, it seems that at the same time, the Sun also has pseudo-moved about 1° .¹¹⁴

3. Precession

The tilt of the Earth's axis concerning the ecliptic is not always fixed but continues to change like a top axis changes. These changes result in a rocking motion on the Earth of $50.24''/\text{year}$. This motion is called precession or *dahriyah*, or *mubadarat al-i'tidalain* motion. The direction of precession is opposite to that of rotation, ie from east to west when

¹¹² Slamet Hambali, Pengantar Ilmu Falak..., p. 203–205.

¹¹³ Zul Amri Fathinul Inshafi, “Aplikasi Data Ephemeris Matahari dan Bulan Berdasarkan Perhitungan Jean Meeus Pada Smartphone Android”, Skripsi (Prodi Ilmu Falak UIN Walisongo Semarang), 2016.

¹¹⁴ Zul Amri Fathinul Inshafi, “Aplikasi Data Ephemeris Matahari dan Bulan Berdasarkan Perhitungan Jean Meeus Pada Smartphone Android”, Skripsi (Prodi Ilmu Falak UIN Walisongo Semarang), 2016.

viewed from the north celestial pole, and will return to its original position in about 25,796 years.¹¹⁵

The precession motion is taken for almost 26,000 (twenty-six thousand years), namely the movement of the earth's axis swaying to form a cone, which has the effect of moving the Aries point (the meeting point between the ecliptic circle and the celestial equator circle) to the west.¹¹⁶

4. Nutation

Nutational motion is wave motion in precession motion. Precession motion is not straight but wavy to form small circles. Nutational motion to create one full rotation (360°) takes about 18.66 years, so the magnitude of the nutation motion is 0° 03'10.05"/day.

The nutation motion, taken for 19 years, is the rocking motion of the earth's axis in precession, which has the effect of constantly moving the earth's magnetic poles, sometimes coincides with the earth's poles, at other times it does not coincide, one time the magnetic poles coincide with the longitudes of Semarang, and at other times it does not coincide with the longitude of Semarang.¹¹⁷

5. Apsiden

Accidental motion is the movement of the aphelion and perihelion points shift from east to west. It takes about 21,000 years to travel one

¹¹⁵ Muhamad Yakub Mubarak, "Pemrograman Data Ephemeris Matahari dan Bulan Berdasarkan Perhitungan Jean Meeus Menggunakan Bahasa Program PHP (Personal Homepage Hypertext Preprocessor) dan MySQL (My Structure Query Language)", Skripsi (IAIN Walisongo Semarang), 2013.

¹¹⁶ Slamet Hambali, "Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus", p. 234

¹¹⁷ Slamet Hambali, "Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus", p.234

rotation of the accident motion, so the magnitude of the accident is $0.17''/\text{day}$.¹¹⁸

¹¹⁸ Muhyiddin Khazin, Ilmu.... p. 130-131

CHAPTER III

ZAGHLUL AL-NAJJAR, INTERPRETATION BOOK OF TAFSIIR AL-AAYAT AL-KAUNIYYAH FII AL-QURAN AL-KARIIM, AND ZAGHLUL AL-NAJJAR’S INTERPRETATION TO Q.S AL-ANBIYA’ VERSE 33

A. The Biography of Zaghlul al-Najjar

1. The Biography

Zaghlul Raghīb Muhammad al-Najjar has a full name Prof. Dr. Zaghlul al-Najjar's. He was born in Thanta, Egypt, on November 17, 1993. He comes from a devout Muslim family. His grandfather became the imam of the mosque in the village where he lived. His father is a memorizer of The Qur'an. Zaghlul al-Najjar completed the memorization of The Qur'an before he was ten years old. As a child, Zaghlul accompanied his father to move to Cairo and study there. He's a geologist.

As an adult, he continued to study at the Faculty of Science, Department of Geology, Cairo University and graduated in 1955 with a Summa Cumlaude. As the best graduate, he won the "Baraka Award" for the Geology category. He got a Ph. D in geology from the Walles University of England in 1963. In 1972 he was appointed professor of Geology. In 2000-2001, Zaghlul was chosen to be Chancellor of the Markfield Institute of Higher Education England. And since 2001, he has been chairman of the Scientific Miracle Commission of the Qur'an and Sunnah at the Supreme Council of Islamic Affairs in Egypt.

With his expertise in science-based interpretation of The Qur'an, he regularly writes a regular article in the rubric, "Min Asrar al-Qur'an" (Secret of The Qur'an), every Monday in the Egyptian daily Al-Ahram, which has a circulation of 3 million copies. Everyday. If seen to this day, Zaghlul al-Najjar's writings have been published about 250, containing the scientific miracles of The Qur'an.¹¹⁹

2. Intellectual Journey

He grew up in a religious family. He has a grandfather who was a priest in his village. And he has an Qur'anic memorizer father. Zaghlul says that when he made the mistake of reading The Qur'an. His father corrected his reading in a sleeping state.¹²⁰

He studied The Qur'an since childhood in the place of learning The Qur'an (kuttub) in his village and under his father's education, who was one of the foremost teachers. He finished memorizing The Qur'an at the age of nine. Then he moved to Cairo with his father and entered one of the primary schools. Then he attended Shubra high school in 1946 and was one of the best graduates.¹²¹

After that, he entered the Faculty of Science at the University of Cairo. He chose the new Geological program that was opened. He liked the program because the leader was a doctor from Germany and Zaghlul excelled in it. He completed his studies in 1955 and received a bachelor's degree in science at judicial *summa cumlaude*. As the best graduate, the

¹¹⁹ Zaghlul al-Najjar, (Terj. Yodi Indrayadi dkk), *Buku Induk Mukjizat Ilmiah Hadis Nabi* (Jakarta: 2013), h. 9-10

¹²⁰ Zaghlul al-Najjar, *Min Ayat al-I'jaz al-Ilmi: al-Ardh fi al-Qur'an al-Karim* (Beirut: Dar al-Ma'rifah, 2005), p.5.

¹²¹ Zaghlul al-Najjar, *Min Ayat al-I'jaz al-Ilmi: al-Ardh fi al-Qur'an al-Karim*, p. 5

university gave him the Barakah Award for the Geology category.¹²²

After graduating, Zaghlul was imprisoned for his interference in a political demonstration, and his trial proved his innocence. But the political decision refused his decree to return to university because of his association with the Ikhwan al-Muslimin. He was considered a real threat to Egypt's secular political power at that time. He was exiled from Egypt in the early 1960s and returned to his country in 1970.

After that, he received his doctorate (PhD) in geology from the University of Wales in England in 1963 and received a partner's degree there. In addition, he also received the Robertson Research Award. He also received a professor (Professor) of geology at the University of Kuwait in 1972 and the University of Qatar in 1978.¹²³

His brilliant career has earned Zaghlul several positions and awards as well as awards. Here is a breakdown of some of his positions and awards:

- a. Advisory Center for the Study of Roberston Britain (1963) and the Switzerland Islamic Development Museum (2001).
- b. He participated in the formation of the Geology Department, King Saudi University from 1959 to 1967.
- c. He worked as a Scientific consultant for the Roberston Research foundation, England, in 1963.
- d. He was chosen as a member of the "Journal of Foramifeeral Research" editorial board published in New York in 1966.
- e. He participated in the establishment of the Department of Geology at

¹²² Zaghlul al-Najjar, *Min Ayat al-I'jaz al-Ilmi: al-Ardh fī al-Qur'an al-Karīm*, p. 5

¹²³ Zaghlul al-Najjar, *Tafsir al-Āyaat al-Kauniyyah fī al-Qur'an al-Karīm*, Juz 2 (Kairo: Maktabah as Syuruq al-Dauliyah, 2008), p. 10

¹²³ Zaghlul al-Najjar, *Tafsir al-Āyaat al-Kauniyyah fī al-Qur'an al-Karīm*, Juz 2 (Kairo: Maktabah as Syuruq al-Dauliyah, 2008), p. 10

Kuwait University from 1967 to 1978.

- f. He was chosen as an advisor to the "Journal Moslem Mu'asher" published in Washington in 1970.
- g. He was a Professor and lecturer at Kuwait University, Department of Geology, in 1972.
- h. Professor in University of California, Los Angeles, the United States in 1977-1978.¹²⁴

Award:

- a. He gets awarded best researcher for the Paleontology seminar, Rome, in 1970.
- b. He received a grant award from the Egyptian Society of Paleontologists in 2000.
- c. He received a grant award from the president of Sudan in the form of a gold medal in science, etiquette, and art in 2005.
- d. He received a grant award from Dubai International for al-Qur'ān al-Karīm and Sunnah Nabawiyah, with the nickname "Asy-Syakhsiyah al-Islamiyyah al-Ula" in 2006, 1427 H.

Grace came again thanks to the persistence of Zaghlul al-Najjar's efforts. In 2005 it received an award from the kingdom of Sudan, and in 2006, it was designated as an Islamic Icon in Dubai. Apart from being active in writing, Zaghlul is also an active speaker at seminars regarding the miracles of The Qur'an in all corners of the world because his lectures ultimately encourage people to convert to Islam as a way of life.¹²⁵

¹²⁴ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Juz 2 (Kairo: Maktabah as Syuruq al-Dauliyah, 2008), p. 9-11.

¹²⁵ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Juz 2 (Kairo: Maktabah as Syuruq al-Dauliyah, 2008), p. 9-11.

3. Zaghlul al-Najjar's Works

He has owned many works. There are about 150 articles and 50 books covering science, including Islamic scientific knowledge, The Qur'an, and science, science in Hadith, *i'jaz 'ilmi*, and many others. However, studies that have increased Zaghlul al-Najjar's authority as an expert in science include scientific discoveries in interpreting the verses of The Qur'an.

There are Zaghlul al-Najjar's Works:

- a. *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'an al-Karīm*
- b. *I'jaz al-Ilmi fī al-Sunnah Nabawiyyah*
- c. *Nazharat fī 'Azmat al-Ta'lim al-Muashir wa Hululilah Islamiyyah*
- d. *Haqaa'iq 'Ilmiyyah fī al-Qur'ani al-Karīm: Namajiz min Isharati al-Qur'aniyyah ila' Ulumi al-Ard.*
- e. *Qadiyyatu al-I'jaz 'Ilmi lī al-Qur'ani al-Karīm wa Dawibitu al-Ta'amul Ma'aha.*
- f. *Min Ayati al-'Ijaz 'Ilmi al-Hayawan fī al-Qur'ani al-Karīm*
- g. *Min Ayatil-'Ijaz 'Ilmi al-Sama' fī al-Qur'ani al-Karīm.*¹²⁶

B. *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'an al-Karīm*

1. Zaghlul al-Najjar's Concept of The Qur'an

The Qur'an is a closing treatise given to the Prophet Muhammad, whose authenticity will always be maintained (Surah al-Hijr: 9). The Qur'an is a guide from Allah SWT to explain problems that humans cannot solve correctly and adequately, both concerning unseen issues, God's commands, and rules of behavior. By using their minds, humans will be able to find the

¹²⁶ Muhammad Ulin Nuha, *Penafsiran Zaghlul al-Najjar tentang Api di Bawah Laut dalam QS. ath-Thūr Ayat 6*, Skripsi, Semarang: UIN Walisongo, 2016.

truth in The Qur'an.¹²⁷

Zaghlul believes that The Qur'an is a book of miracles from the aspect of language and literature, aqidah-ibadah-akhlaq (Tashriq), historical information, and no less important from the point of view of scientific cues. The Qur'an is based on a solid foundation. Therefore, according to Zaghlul, humans are only allowed to prove the scientific miracles of The Qur'an by utilizing the facts and laws of science that remain unchanged, even though it is possible to add and strengthen the nature of The Qur'an. It's in the future. This provision generally applies to the Kauniyyah verses contained in The Qur'an. So that people with a reason can't determine the source of scientific nature other than Allah SWT. This is strong evidence for scientists today that The Qur'an is truly the word of Allah who sent it down to the last Messenger based on His knowledge and served to justify the Prophet Muhammad.

2. Book of Interpretation

- a. The title: *Mukhtarāt min Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*
- b. Author: Zaghlul Raghib Muhammad al-Najjar known as Prof. Dr. Zaghlul al-Najjar.
- c. Publisher: Maktabah al-Syuruqal-Dauliyah
- d. The city of publisher: Mesir
- e. Publication year: 2007
- f. Number of chapters/volume: 4 volumes

This is the result of Zaghlul's long hard work, published in August in four volumes, and then reissued into three volumes. This tafsr measures 17x24 cm, and has been translated by Masri el-Mahsyar Bidin

¹²⁷ Zaghlul al-Najjar, *Buku Induk Mukjizat Ilmiah Hadits Nabi*, p. 15.

and Mirzan Thabrani, which was published by Shorouk Bookshop Jakarta in September 2010.

Volume 1: Contains surah al-Baqarah to surah al-Isra '

Volume II: Contains Surah al-Kahf to Surah Luqman

Volume III: Contains surah as-Sajdah to surah al-Qamar

Volume IV: Contains letters ar-Rahman to surah al-Qari'ah.¹²⁸

Zaghlul in presenting the description of his interpretation uses the systematic manuscripts. That is, he describes his interpretation in accordance with the order of the verses and letters contained in The Qur'anic manuscripts, starting from the letter al-Baqarah to the letter al-Qari'ah. This interpretation can be ascertained that this interpretation is the result of a selection of the verses of The Qur'an. Precisely with regard to scientific facts.¹²⁹

The arrangement of the discussions contained in this interpretation in volume 1 consists of 56 discussions. The second volume consists of 42 discussions. Continued in the third volume consisting of 38 discussions. And in the fourth volume consists of 40 discussions. So the total number of discussions contained in the book of Tafsir al-Aayaat al-Kauniyyah fii al-Qur'an al-Karim is 176 in 66 letters.¹³⁰

List of letters and verses contained in volume I:

No.	Letter Name	Theme	Verse
1.	Al-Baqarah	Creation of the cosmos	29

¹²⁸ See catalog volume 1 Zaghlul al-Najjar, *Tafsir al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*,

¹²⁹ See catalog volume 1-4 Zaghlul al-Najjar, *Tafsir al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*

¹³⁰ See catalog volume 1-4 Zaghlul al-Najjar, *Tafsir al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*,

2.	Al-Baqarah	Menstruation	222
3.	Al-Imran	Embryology	6
4.	An-Nisa	Skin cells	56
5.	Al-An'am	Atmosphere	125
6.	Al-A'raf	Dog	176
7.	Yunus	Rays and light	5
8.	Huud	Earth is the source of water	44
9.	Yusuf	Grass plant	47
10.	Ar-Ra'du	The moon and the Earth	2
11.	Ar-Ra'du	Taxonomy, Genetics, and geology	4
12.	Ar-Ra'du	Sperm dan ovum	8
13.	Ar-Ra'du	Mineral substances	17
14.	Ar-Ra'du	Coral reef	41
15.	Al-Hijr	Stars and energy	14,15
16.	Al-Hijr	Wind	22
17.	An-Nahl	Mountains, functions, and types	15
18.	An-Nahl	Livestock	66
19.	An-Nahl	The benefit of gum and adhesive	68
20.	An-Nahl	Bee	68

21.	An-Nahl	Carcass	115
22.	An-Nahl	Female honey	69
23.	An-Nahl	Honey reproduction	69
24.	An-Nahl	Honey as medicine	69
25.	Al-Isra'	Day and night	12
26.	Al-Isra'	Atoms and their charge	44 ¹³¹

List of letters and verses contained in volume II:

No.	Letter Name	Theme	Verse
1.	Al-Kahfi	Ashabul kahfi	18
2.	Al-Anbiya	Big bang	30
3.	Al-Anbiya	Earth rotation	33
4.	Al-Hajj	Fly	73
5.	Al-Mukminun	Fetus	14
6.	Al-Mukminun	Bones	14
7.	Al-Mukminun	Creation	14

¹³¹ See catalog volume 1 Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*,

8.	Al-Mukminun	The process of creation	12-14
9.	An-Nur	Color spectrum	40
10.	An-Nur	Ice/snow formation	43
11.	An-Nur	Cloud	43
12.	Al-Furqan	The various of water	53
13.	An-Naml	Ant	18
14.	An-Naml	Hoope Bird	20
15.	An-Naml	Sea waters	61
16.	Al-Ankabut	Spiders	41
17.	Ar-Rum	Dead seas	1-4
18.	Luqman	Embryo growth	14 ¹³²

s and verses contained in volume III:

No	Letter Name	Theme	Verse
1.	As-Sajdah	Reproductive water	8
2.	As-Sajdah	Creation phase	9
3.	Fathir	Fruit and Variety	27
4.	Yaasin	Chlorophyll	80

¹³² See catalog volume 2 Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm*,

5.	Ash-Shafat	Pumpkin tree	146
6.	Az-Zumar	Earth and its shape	5
7.	Az-Zumar	DNA	6
8.	Az-Zumar	Mother's womb	6
9.	Ghafir	Earth stability and its composition	64
10.	Fushshilat	Earth's creation phase	10
11.	Al-Jatsiyah	Wind	5
12.	Al-Ahqaf	Pregnancy period	15
13.	Al-Fath	Trees sprout	29
14.	Qaaf	Coccyx	4
15.	At-Thur	Fire under the sea	6
16.	An-Najm	Genetic code	33
17.	Al-Qamar	Grasshopper	9 ¹³³

List of letters and verses contained in volume IV:

No	Letter name	Theme	Verse
1.	Ar-Rahman	Seawater mass	19-20
2.	Ar-Rahman	Extraterrestrial	33

¹³³ See table of contents Volume III Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*,

3.	Al-Waqi'ah	Sperm dan ovum	58-60
4.	Al-Waqi'ah	Cell	60
5.	Al-Waqi'ah	Chlorophyll	71
6.	Al-Waqi'ah	Clouds and rain	68-70
7.	Al-Waqi'ah	Star	75-76
8.	Al-Hadid	Iron	25
9.	Al-Thalaq	Seven layers of heaven and earth	12
10.	Al-Haqqah	Planet	11
11.	Al-Ma'arij	Genetic code	40
12.	Nuh	Fingerprint	13-14
13.	Al-Qiyamah	Fossil	4
14.	Al-Insan	DNA	1
15.	Al-Insan	Embryology	2
16.	Al-Mursalat	Womb	20-23
17.	Al-Naba'	Storm and lightning	14
18.	Al-Nazi'at	The expanse of the earth	30-31
19.	At-Takwir	Blackhole	15-16
20.	At-Thariq	Brilliant star	1-3
21.	At-Thariq	Rib	5-7

22.	At-Thariq	Rain and the process	11
23.	At-Thariq	Cracks of the earth	12
24.	Asy-Syams	The sun and the day	3
25.	Asy-Syams	The moon and the star	4 ¹³⁴

3. Writing Background

Zaghlul understands that in The Qur'an, there are verses that contain scientific invitations that stand on the principle of the liberation of reason and superstition and freedom of thought. The Qur'an instructs people to pay attention to all areas of the earth and themselves. According to Zaghlul al-Najjar, there are no less than 1000 verses that are explicitly (*sharih*) and hundreds of others that are not directly related to the phenomena of the universe. Furthermore, Zaghlul argues that the verses of the Kauniyyah will not be possible for us to understand perfectly if they are only understood from the point of view of the Arabic language. To know perfectly, it is necessary to know its nature scientifically.

As Zaghlul has also stated in the opening, Zaghlul is deeply convinced that the Qur 'an is a book of miracles of both its aspects of language and literature, its literature, its worship, its content (*tasyri* '), its historical information, and is equally important from the point of view of scientific cues. The latter dimension of miracles means the superiority of this book in providing amazing and accurate information about the nature of

¹³⁴ See the table of contents for Volume IV Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*,

the universe and its phenomena, which no human being at the time of the revelation of The Qur'an can know it and applied science has not been until after centuries of The Qur'an century of the revelation of The Qur'an. *Al-Qur'an al-Karīm* instructs us to use the mind against ourselves and the natural horizon, as explained in Fusshilat's letter 53:

سَدْرِيهِمْ آيَاتِنَا فِي الْأَفَاقِ وَفِي أَنْفُسِهِمْ حَتَّىٰ يَذَبَّيْنَ لَهُمْ أَنَّهُ الْحَقُّ ۖ^{١٣٥}
أَوَلَمْ يَكْفِ بِرَبِّكَ أَنَّهُ عَلَىٰ كُلِّ شَيْءٍ شَهِيدٌ

“We will show them Our signs in the horizons and within themselves until it becomes clear to them that it’s the truth. But is it not sufficient concerning your Lord that He is, over all things, a Witness?” (QS. Fushshilat 41: 53).”

How can the "interpretation of continuity" outlined in The Qur'anic verse until the doomsday is carried out in human knowledge in human knowledge involved the secrets of the universe and itself if all existing knowledge is not used to achieve it? The scientific facts in The Qur'an exceed a thousand concrete verses and several other verses whose meaning is close to concrete. This scientific fact is impossible to understand through a language approach alone. However, such an approach is very important and necessary, but must also use consistent scientific data to realize it. After all that, we can see the pioneering of The Qur'an in instructions about various scientific facts, which is called "Scientific Miracles in The Qur'an".¹³⁵

4. Interpretation Method

The approach used by Zaghlul is objective, namely an empirical approach that focuses only on scientific interests. In this approach, At this

¹³⁵ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyah fī al-Qur'ān al-Karīm*, p. 22-23

approach a link between *kauniyah*'s verses and modern science. The extent to which the scientific paradigm provides support in understanding the verses of The Qur'an's well as exploring various types of knowledge, new theories, and things that were discovered after the time of the revelation of The Qur'an, such as natural law, astronomy, chemistry, physics, zoology, botany, and so on.

The method of interpretation found in the book interpretation of *Tafsīr al-Āyat al-Kauniyyah fī al-Qur'ān al-Karīm* is an intratextual or popular method with thematic or *maudhu'i*, namely the interpretation of certain verses that have been compiled according to the theme of interpretation. The theme in this interpretation is a scientific subject where the selection of verses is related to scientific discoveries. Zaghlul had a few separate steps into interpreting those verses. In the first step, Zaghlul chose one or a paragraph to be used as a headline without mentioning the theme of the discussion. There was only a talk introduction if that was necessary. Then the linguistic aspect, which includes the connotative meaning and linguistic style, was revealed—the second step, featuring the aspect of context or *asbaab an-Nuzul*. The third step is *Nash*'s link to another verse or hadith. The fourth step presents aspects of the general principles and common purpose of Islam.¹³⁶

In his paper, Selamat bin Amir et al. found that Prof. Dr. Zaghlul al-Najjar compiled his works based on classical and modern writing methods. Manhaj, in terms of classical composition, the most preserved by him is to arrange the discussion verse or surah according to the arrangement as contained in The Qur'an. Starting with Surah al-Baqarah (*Juzu '1*) until Surah al-Nās (*Juzu '30*). However, it should be noted that the selection of

¹³⁶ Zaghlul al-Najjar, *Tafsīr al-Āyat al-Kauniyyah fī al-Qur'ān al-Karīm ...*, Muqaddimah.

the verses discussed in this interpretation is more directed to the verses of The Qur'an related to Tabi'i Science or Natural Science. It is based on his main area of expertise that includes scientific discoveries through the universe's dimensions, the creation of beings, and health. Do not discuss a topic that has nothing to do with natural science.

The steps he took After taking an inventory of all the Kauniyah verses that he found in The Qur'an, he tried to give an idea of the letter he was going to discuss, of course, by mentioning the scientific phenomena in it, that Zaghlul began to put down the verses of his choice for him to interpret. Each selected verse, of course, he will immediately put forward his scientific arguments so that the reader can immediately find out the essence of the discussion of each of these verses.

In interpreting these verses, Zaghlul did not rely much on scientific opinions but seemed to rely on the scientific agreement prevailing at that time. And at the end of each discussion, Zaghlul presents pictures of scientific explanations related to the verse.

5. Interpretation Style

Based on the author's analysis, the book of *Tafsīr al-Āyat al-Kauniyyah fī al-Qur'ān al-Karīm* is a book of interpretation with a scientific style. The criteria for the style of scientific interpretation are found in this book, namely interpreting The Qur'an in relation to science. The verses that are interpreted in this style of interpretation include the verses of the *kauniyyah*, namely the verses related to the phenomena of the universe. This interpretation is equipped with scientific theories and not a few at the end of the interpretation, and pictures are presented to explain the scientific description presented. This interpretation has language that is easy to

understand, and scientific explanations dominate the explanations.

When examined again, the form of review and the content of information contained in the book of this interpretation is included in the category of *bi al-ra'yi* interpretation, namely the interpretation in which in delivering an explanation of its meaning, the interpreter hold on to understanding and inferences based on ra'y alone. This is seen in most of his interpretations which show scientific cues from a verse. However, it does not deny that its interpretation uses the *bi al-ma'tsur* interpretation, which is also shown in several verses which interpret it by mentioning other verses or hadiths.¹³⁷

6. Systematic Discussion

Tafsīr al-Āyat al-Kauniyyah fī al-Qur'ān al-Karīm is divided into four volumes. There are 56 discussions in volume I, 42 in volume II, 38 in volume 3, and 40 in volume IV. So, there are 176 discussions on 66 suras in the book of *Tafsīr al-Āyat al-Kauniyyah fī al-Qur'ān al-Karīm* as a whole.

C. Zaghlul al-Najjar Interpretation of Q.S al-Anbiya' Verse 33 about Earth Rotation

{وَهُوَ الَّذِي خَلَقَ اللَّيْلَ وَالنَّهَارَ وَالشَّمْسَ وَالْقَمَرَ كُلٌّ فِي فَلَكٍ يَسْبَحُونَ} [الأنبياء :
[33]

*“And it’s He who created the night and the day and the sun and the moon; all [heavenly bodies] in orbit are swimming.”*¹³⁸

1. The Linguistics Significance of Sacred Text

¹³⁷ Maqbilqis Firizeqisfi, *Makhluk Hidup dari Air Perspektif Zaghlul Najjar: Tafsir Ilmi Atas Ayat-Ayat Penciptaan*, Skripsi, Surabaya: UIN Sunan Ampel, 2020.

¹³⁸ Q.S al-Anbiya [21]: 33

The word *khalaqa-yakhluqu-khalaqan* mean *qaddara-yuqaddiru-taqdīran* which means destiny. The word *khalaqa* means creation. This word is used to create something without origin or any previous example. The word *al-falaku* is the trajectory of the celestial bodies in their respective orbits, in which all celestial bodies circulate on that trajectory. The plural forms of *al-falaku* are, *aflaaku* and *fuluukun*. *As-Sabh* is a fast track in water or the air. It is said that the word *sabaha-yasbahu-sabhan-sibaahatan* refers to the transitional movement of stars in their orbits.¹³⁹

2. Earth Rotation in The Qur'an

When human beliefs predominated regarding the theory of solidity, the stillness or immobility of the earth, The Qur'an was revealed to confirm the theory of the movement of the earth and other celestial bodies. However, because in general, the motion of the earth is hidden from human sight, a sign from The Qur'an came to them with the theory that the earth moves gently and indirectly, so as not to surprise the people of the Arabian Peninsula so that they are confused about understanding this. So, that theory can reject that the earth is moving.¹⁴⁰

They could do that because the people of the Arabian Jazirah did not yet have scientific knowledge or became observers of science. However, the signs of The Qur'an are numerous, which point to the movement of the earth and come with clarity of cosmic truth.¹⁴¹

Although the people of the Arabian Jazirah are not experts in scientific knowledge, The Qur'an hints at many things about the movement of the earth that are brought out with something clear. This is explained directly with the

¹³⁹ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.131

¹⁴⁰ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.131

¹⁴¹ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.131

cosmic truth of that era, in which people's beliefs were still dominated by the theory that the earth was stationary. Indeed, the people of the Arabian Jazirah will deny The Qur'an, the Messenger, the revelations, and among them, the people of the Arabian Jazirah will deny the guidance of God.¹⁴²

From here, all the signs of The Qur'an that talk about the nature of the cosmic, while the science of the nature of the cosmic does not exist in human science in general at that time. Some of these signs came gradually, talking about the movement of the earth and its spherical shape. Scientific cues come with indirect messages or use figures of speech. However, even so, Allah the Creator explains legally rational forms, even delivered in detail and comprehensively, and include signs. That the movement of the earth is *sabhun*, it cannot be carried out by non-solid matter. It must be carried out by a solid case that has a core—for example, atoms. A solid object always has an atomic nucleus.

As-Sabh etymologically is a rapid movement carried out by the body with the movement of the whole core. Like the movement of the earth, sun, and moon in their orbits. They have orbits that are bounded by other things, and they never collide with each other in their trajectories. Each alternation of day and night in these two commendable verses is a very subtle and subtle hint of the movement of the orbit in its orbit in front of the sun.¹⁴³

a. Alternating Day and Night

Night and day are just two conditions of the time that must exist. Where it appeared day and night, it was earth. Were it not for the circular shape of the earth and its rotation, neither day nor night would appear.

¹⁴² Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.131

¹⁴³ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.132

The day will never precede night on the part of the earth, and vice versa, so it cannot be confused. Evidence of this occurrence is here in these verses. In the plural, In the plural, every object in that orbit revolves in its trajectory.

b. Mountain Walk like Clouds Walk

Walking a mountain as it goes a cloud is a very high kinetic over the two orbits of the earth around its orbit and over the movement of the earth around the earth and relative to the sun as well as because the earth in which it is the movement of the clouds, bound to the earth by the medium of gravity and its movement is regulated by earth movement. And when the mountains move like the movement of the clouds, there are signs implied for the various movements of the earth as the clouds move.¹⁴⁴

c. Every Night and Day is Closed with Others

Etymologically, *ghisy* means cover or satire. The *masdar* is *ghisiyyah*, *ghisyaawatan*, and *ghisyaan* means to bring something that covers something or is covered with a cloth because closure is what is covered by something. The purpose of covering the night with the day is verily Allah covers the darkness of the night when the day is in progress, so it becomes night. When the night is covered with the light of day, there will be the day. That is a very gentle hint to the correctness of the two movements of the earth around its rotation in front of the sun.¹⁴⁵

Rotation every day or every 24 hours results in a gradual change of

¹⁴⁴ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm, Jilid II*, p.132-133

¹⁴⁵ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm, Jilid II*, p.133

day and night, meaning that the darkness of light does not suddenly change. This change resulted in a fast turnaround time, not always night and not always day. The phenomenon of day and night is described in many places in The Qur'an, not only in this verse. Even in another verse, the alternation is explained in detail. Another verse describes the two rotations of the earth in orbit in front of the sun in more detail. Night and day are always equated with darkness and light.¹⁴⁶

d. Turning Night into Day and Turning Day into Night

Etymologically, *al-wuluju* means to enter. What is meant by day and night is not only the time but also bound to the place that alternates from day and night. That place is the earth. Earth is a place that has a relationship between day and night. On this basis, the meaning of the word of Allah al-Hajj [22]: 61 is that Allah SWT has included a part of the earth that gradually covers or covers the night which is filled with light during the day. On the other hand, Allah also includes the earth filled with light during the day. Then it is covered by the light of the night continuously in a step-by-step manner until Allah inherits this earth everything that is on it.¹⁴⁷

None of the more detailed signs of this parable correspond to the earth's rotation about its axis in the presence of the sun. This signal gives an indication that the earth is oval because if the shape of the earth is not oval or not shaped like a ball, then it will not be

¹⁴⁶ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm, Jilid II*, p.133

¹⁴⁷ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm, Jilid II*, p.133

able to go around its axis and the sun. It would be impossible for the time of night and time of day to be gradually different.¹⁴⁸

e. Release Day from Night

Linguistically, the meaning of to strip is to remove or peel the skin of an animal from its flesh, although it does not make sense to strip the time of day from the time of night. Both during the day and at night are places on earth that occur alternately between light and dark, not just the time. For this, the meaning of QS. Yaasiin [36]: 37 that verily Allah (SWT) withdraws or strips the levels of the day from several places on earth occupied by the night time as a person skinning an animal from its flesh. This will not happen unless the earth rotates about its axis in front of the sun.¹⁴⁹

Personified, taking the light of day from the cover of the earth as skinning an animal from its flesh is used as an emphasis that the light of day develops in the thin layer of the gas cover that covers the earth, which is covered by stars as animal skin covers the body. The light is pure from the sun, not coming from the earth itself. Sunlight is reflected from the earth's surface and spreads around the world from the gas cover.¹⁵⁰

The light grows darker as it moves away from the sun's rays, just as the darkness reigns from the open space, which pervades the entire universe with a common nature. Because the absence of the form of sufficient light to create the spread earlier came from the sun's light source to illuminate the other, in the form of stars. This light would not

¹⁴⁸ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.133-134

¹⁴⁹ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, Jilid II, p.134

¹⁵⁰ Zaghul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.134

appear without the rotation of the air layer.¹⁵¹

3. Earth Rotation in The View of Modern Science

Earth is one of the planets in the solar system and is the third planet from the Sun. The distance is approximately 150 million km. Every circulation of celestial bodies, the circulation is always constant or the same. The earth has various movements, including the earth's rotation that causes day and night, and its rotation according to its axis around the sun with its inclination. Therefore, there is a change of seasons. Its movement towards the sun (earth revolution) of the solar system and the center of the galaxy being the largest center to the end is unknown except Allah knows best.¹⁵² There are some Earth Movement here:

a. Axial Motion (Earth Rotation)

In this rotation, the earth rotates on its axis from west to east around the sun at a speed of 1674 km/hour. To complete its rotation in one day, it takes 24 hours (23 hours, 56 minutes, 4 seconds). With this rotation, there was day and night of varying lengths. This can be seen from the Earth's axis of rotation, which is approximately 23.5 degrees from the ecliptic in its orbit, known as a sidereal day, while the sidereal day is exactly 24 hours.¹⁵³

b. Precession

Precession is the moist motion that causes the earth to tilt to the right and the left according to its vertical axis. This motion causes the earth to

¹⁵¹ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qurʾān al-Karīm* Jilid II, p.134

¹⁵² Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm* Jilid II, p.134-

¹⁵³ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm* Jilid II, p.135

swing or move on its axis, revolution, and rotation around the earth. This movement causes the earth to swing two movements step by step, which causes changes in every pole of the earth, both the north pole and the south pole. These two things are illustrated as two points whose imaginary axis is intersected for the two rotations of the earth with the outer surface of the galaxy. Earth's axis oscillates with each other to a degree sufficient to describe a complete circle. This precession takes between 26,000 years (25,800 years) per precession. This axis is described as two opposite cones whose vertices are the axis of the earth.¹⁵⁴

c. Nutation

Nutation movement makes the earth shake around its axis. This movement and travel are caused by the gravity of the moon and sun on the earth. Therefore, the movement causes the imaginary regions, the axes of the earth, or the polar regions to move away. It is described as the earth's axis, which is the ending of two opposite poles, whose two conical heads are on the earth's axis from its cosmic, from the basic region to the curved area with two equal curvatures.

The movement moves with a curved motion, and the curve is the same. It vibrates with the same vibration. It is estimated that the number of oscillations that the earth describes as it circulates is approximately 1400 curvatures. One half moves to an imaginary area, while the other half moves to the left. That one arch has a journey of 18.6 years. This movement reached its perfection 26,000 years ago.¹⁵⁵

¹⁵⁴ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qurʾān al-Karīm* Jilid II, p.135

¹⁵⁵ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qurʾān al-Karīm* Jilid II, p.136

d. Earth Rotational Speed Deceleration

This deceleration occurs for a fraction of a second every century, while the moon accelerates its axial rotation at the same rate, this causes a step-by-step change in the state of equilibrium between the earth and the moon, eventually resulting in the sinking of the moon from the gravitational pull of the earth. Then this moon will fuse with the sun. In the 14th century, The Qur'an has discussed the Q.S. al-Qiyaamah [75]: 9 concerning the merging of the sun and the moon. Actually, the moon already has its own calculation of evolving using the Earth's gravitational force.¹⁵⁶

e. Earth Orbit Transition Movement

The Earth rotates on its axis in an oval shape around the sun at a speed of 30 km/s (29.76 km/s) to finish a complete rotation. This cycle takes one year in syamsiyyah calculations (approximately 365, 24 syamsiyyah days) which is divided into 12 qamariyyah months and four seasons.¹⁵⁷

f. Earth Orbital Rotation Movement

With that, the Earth's elliptical orbit around the sun is brought closer to a circular shape, and this motion takes 92,000 years for the foci of our Earth's orbits to approach each other until they coincide, and then begin to diverge again.¹⁵⁸

g. Earth Motion with The Solar System/Galaxy

¹⁵⁶ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.136

¹⁵⁷ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.136

¹⁵⁸ Zaghlul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, 136

This movement towards the constellation Hercules at a speed of about 20 km /s.¹⁵⁹

h. Movement of the Earth's Circular with the Remnants of The Entire Solar System around the Galactic

This movement is followed by the Milky Way galaxy in a spiral orbit that has a speed of about 206 km/h, the second (741,600 km/h) to complete one complete cycle in a period of about 250 million years.¹⁶⁰

i. The Movement of the Earth, Solar System, and Galaxies

At a speed of about 980 km/s (3,528,000 km/h) to lead to the phenomenon of celestial expansion, with our galaxies moving away from each other in the lower sky galaxies. It is possible that the earth has other motions that have not been revealed.¹⁶¹

With this review it is clear that the motion of the earth on its axis, and its motion in its orbit around the sun, and with the sun in its various orbits is a patent cosmic fact and The Qur'an mentions it in more than 20 verses during the belief in the stability and static of the Earth. ; which is certain that the glorious al-Qur'an is the word of Allah the Creator, and confirms that the last Messenger (may Allah bless him and grant him peace) is connected with revelation, and a teacher from the Creator of the heavens and the earth (Glory be to Him).

¹⁵⁹ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.136

¹⁶⁰ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.136-

¹⁶¹ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'an al-Karīm* Jilid II, p.137

CHAPTER IV

ZAGHLUL AL-NAJJAR'S THOUGHT ABOUT EARTH ROTATION AND ITS CORRELATION WITH CONTEMPORARY SCIENCE

A. Zaghlul al-Najjar Interpretation Analysis of The Earth Rotation on QS. al-Anbiya' Verse 33

To analyze further Zaghlul al-Najjar's interpretation of QS. al-Anbiya' verse 33 requires a method of analysis to be reached with a more systematic conclusion. The method in question is an analytical method that forms the basis for the scientific interpretation of The Qur'an as follows:

1. Linguistic Aspect

The word *khalaqa-yakhluku-khalaqan* means *qaddara-yuqaddiru-taqdiiran* which means destiny. The word *khalaqa* means creation. This word is used to create something without origin or preceding example. The word *al-falaku* is the trajectory of the celestial bodies in their respective orbits, in which all celestial bodies circulate on that trajectory. The plural forms of *al-falaku* are, *aflāku and fulūkun*. *As-Sabh* is a fast track in water or the air. It is said that the word *sabaha-yasbahu-sabhan-sibāhatan* refers to the transitional movement of stars in their orbits.¹⁶²

The word of *yasbahūna* in Q.S. al-Anbiya' [21]: 33 have a meaning swimming. Actually justn't a earth can circulating or swimming, but there are moon, sun, some objects like a stars, constellation, galaxies, planet, etc. All of them swimming regularly without colliding.

¹⁶² Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Jilid II, p.131

Exaltation and circulating have the same root, it's *as-Sabh*. However, *as-Sabh* has different meaning if using different *wazan*. Circulating or in Zaghlul al-Najjar's is swimming, that meaning from the word *sabaha-yasbahu-sabhan* who's following the *wazan fa'ala-yaf'alu-fa'lan*, while the meaning of glorifying is taken from the word *sabbaha-yusabbihu-tasbīhan* who's following the *wazan fa''ala-yufa''ilu-tafsīlan*. Zaghlul al-Najjar interprets the word *yasbahūna* with swimming not glorifying. Swimming it's mean circulating. He interprets like that because all celestial bodies in this universe circulating like a someone swim.

“Night” is mentioned in the Noble al-Qur'an in ninety-two places, and in most of these places, our Lord (Blessed and Exalted to Him) bestows upon us the exchange of night and day, for the truth of life on earth, and assistance to man in determining the time and history of successive events, Because without alternating between deep night and light day, man's sense of the passage of time disappears, and his ability to follow events and determine their dates ceases.¹⁶³

Al-Nahār means noon. Linguistically, it is the opposite of night. It is half the time of day when the sun rises. The light spreads everywhere and is known in terms of time; between sunrise and sunset, it is called *al-Nahār*. From the Islamic *shariate* side, consistent with the time of the rising of the dawn of *shadiq* to the sunset of the sun.¹⁶⁴

Allah created the night, day, sun, and moon. It all goes in the place that god has depended on the axis of each one which will never stray from its anvil. Every celestial object has its axis and orbit. All the celestial bodies are never quite silent, but they continue to circulate on an orbit line called the

¹⁶³ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Volume IV, p. 497

¹⁶⁴ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* Volume IV, p. 489

orbit. This fact is visible on the Sun and the moon. Likewise, the circulation of the earth on its axis makes day and night come and go as if they were circulating too.¹⁶⁵

Night and day are two enormous cosmic signs of Allah's verses in His creation, both of which witness the accuracy of cosmic creation. And the regularity of planetary movements in the cosmic. (haram: boat), Allah equates the boat with a celestial body. Or to punish definite provisions in the cosmic. And from whom sun came is the movements of every earth and sky. Strengthened by appearing the most orderly shifts of the seasons and the climate, they are the regular result of the change of day and night. And not all of it was accompanied with accuracy.¹⁶⁶

In science, the Moon and Earth both orbit the sun together in orbit. But on a larger scale, the Earth and Moon appear to be 'swimming' in waves around the sun. Each celestial object floats in waves in its orbit, making it appear to rise and fall following an oval or rounded path around the sun.

In the other view, On the other hand, mathematics also explains that a rotating object needs to continue in a wave path around its center. Modern science has proven that all cosmic things move from their place. But because of the expansion of the universe, these objects never return to their rightful place.¹⁶⁷

¹⁶⁵ Diakses dari <https://tafsirq.com/21-al-anbiya/ayat-33#tafsir-quraish-shihab> pada Senin, 30 Agustus 2021 pukul 21.56 WIB

¹⁶⁶ Zaghul al-Najjar, Zaghul al-Najjar, *Tafsīr al-Ayāt al-Kauniyyah fī al-Qurʿan al-Karīm Volume III*, p. 549

¹⁶⁷ Accessed from <https://techno.okezone.com/read/2016/08/04/56/1455426/saat-alquran-explain-bumi-berenang-di-orbitnya>, on Monday, August 30th, 2021 at 21.49 WIB

2. *Asbābu al-Nuzūl* Aspect

When human beliefs dominate on a theory solid, silent, or unmoving earth, The Qur'an was revealed to confirm the theory of the movement of the earth and other celestial bodies. However, because in general, the motion of the earth is hidden from human sight, The Qur'anic signal came to them with the theory that it moved with a gentle and indirect motion so as not to shock the people on the Arabian Jazirah so that they are confused until can reject the theory of the earth moving.¹⁶⁸

Because, at that time, the people of the Arabian Jazirah had scientific knowledge neither nor became scientific observation. Although the signs of The Qur'an are many that lead to the movement of the earth, it comes with a clarity of cosmic truth.

Although the people of the Arabian Jazirah are not experts in scientific science, The Qur'an suggests very much the movement of the earth being brought to pass with something obvious and explicit, directly with the cosmic truth in an era where people's beliefs are still dominated. With the theory that if the earth is silent, steady, the earth is solid, indeed the people of the Arabian Jazirah would lie to The Qur'an, the apostles, and revelations. Among them, the people of the Arabian Peninsula will deny the guidance of divinity to each other.

From here, all signs of The Qur'an speak of cosmic matter, while the science of cosmic matter does not exist in human science in general at that time. In fact, some of these signs came gradually, talking about the movement of the earth and its spherical shape. Scientific cues come with either an indirect or a *majas*. Nevertheless, Allah the Creator provides an explanation

¹⁶⁸ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, p. 131

in forms that are legally rational, even delivered in detail and comprehensively, and include signs.¹⁶⁹

3. Reasonable Aspects of Verse

Surah al-Anbiya' verse 33 has a reasonable verse with surah al-Hajj verse 61. Allah's words in Q.S al-Hajj [22]: 61 that Allah SWT enters a part of the earth that covers or covers the night gradually, which in that place is filled with daylight. Rather, God also enters the earth filled with daylight, then is covered by night light continuously in a step-by-step way until God inherits this earth everything that is on it.¹⁷⁰

The Word of Allah QS. Yāsīn [36]: 37 confirms that Allah (SWT) pulls or removes the levels of the day from several places on earth that are occupied by nighttime as someone who skins an animal from its flesh. This will not happen unless the earth rotates toward its axis in front of the sun.¹⁷¹

4. Scientific Aspect

As for the scientific aspect presented by Zaghlul al-Najjar in its translation, which describes the earth's movements in space, Zaghlul al-Najjar stated that the alternation of day and night is not without cause, but the earth's rotation is. Without the rotation of the earth, there would never be day and night. Not only did the earth rotate, but it showed the earth's movements in conjunction with the various celestial objects. In QS al-Anbiya, it is explained that everything in orbit will surely circulate in that orbit, which is done not only by the earth but also by the moon and the planets. In fact, the sun, moon,

¹⁶⁹ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm*, p. 132

¹⁷⁰ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm Jilid II*, p.133

¹⁷¹ Zaghlul al-Najjar, *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm Jilid II*, p.134

earth, and other planets revolve around something, the space center. Not only that, the galaxies are likewise circling at a single central point in the universe.

According to geology, if the earth does not rotate, it will have a bad impact on human life. Since there is no rotation of the earth on its axis, some places are very hot, and some are very cold. There will be solar radiation. All the water on earth will collect and form two oceans, and a new continent will be developed.

The earth will be a perfect sphere. This is because the rotation of the earth on its axis at the current speed causes the earth's shape to protrude around its equator, thus being without a perfect spherical shape. Without this rotation, gravity would be able to pull the earth into a perfect sphere. The bulge in the earth's center causes the oceans to be at the equator as far as 8 km. If the earth were perfectly round, the world's oceans would spread out and form oceans around the north and south poles, with one large continent forming in the middle of the earth.

B. The Relevance of Zaghlul al-Najjar's Thought with Contemporary Science

To find out the relevance of Zaghlul al-Najjar's interpretation of the dynamics of the development of modern science, it is necessary to explain the movement and rotation of the earth in space according to the views of physicists and astronomers. Not only that, it turns out that there are various kinds of motion and rotation of the earth in space. Earth orbits with the other planets around the Sun.

The movement experienced by the earth has relevance to modern scientific theories, namely the theories of Kepler and Copernicus. In fact, this theory was coined by the Arab Muslim scientist (1304-1375 AD) Ibn al-Syātīr, long before Kepler and Copernicus formulated it.

Aristarchus (3rd century BC), a scientist from Greek has first proposed a theory like Nicolaus Copernicus. His theory tells about the heliocentric theory that the sun's position in the universe is the center. But there's Aristotle (lived in 384-322 BC), another Greek philosopher who refuted that theory. Then, there's a scientist who lived in 151-127 BC, Ptolemy reinforced. It's happened because there isn't a rebuttal for 15 centuries and there isn't a controversy for 12 centuries.¹⁷²

Then, Nicolas Copernicus (1473-1543 AD) read Aristarchus's statement about heliocentric theory in his book. Finally, he brought back the theory that all planets circulate the sun. According to Copernicus, the solar system is centered on the sun was picturesque and more logical. But, there isn't evidence for this argumentation. Kepler explains that the law can arrange the orbit is simpler; if the position of the Sun was centered. And then, Newton also tells and shown that it's happened because of universal gravitation. If the gravity worked, the sun must be surrounded by all the planets.¹⁷³

Copernicus spawned a theory entitled 'De Revolutionibus Orbium Coelestium.' The theory is a development of heliocentrism (solar system centered on the Sun) also denied the geocentrism (Earth is the center of the solar system) advanced by earlier scientists Aristotle and Pythagoras. Further in his theory, Copernicus declared that the earth moves and circles on its axis, around the sun with other planets. This also refutes the previous opinion that the Earth is stationary or not moving. It also contradicts an earlier claim that the earth is silent or stationary. What Copernicus believes is supported by Galileo Galilei in

¹⁷² Siti Romlah, "Sains dan Teknologi dalam al-Qur'an", p. 23

¹⁷³ Siti Romlah, "Sains dan Teknologi dalam al-Qur'an", p. 23-24

the 16th-century c.e. The theory of the earth moved and revolved on its axis, which Copernicus and Galileo refer to as the current science textbook current.¹⁷⁴

Galileo believed in the Copernican theory (planets around the Sun) from the start, but he only started to publicly support it when he found the evidence needed to support it. He wrote about Copernicus' theory in Italian (rather than academic Latin as was customary at the time) so that his views became widely supported outside the universities. He was disturbed by the professors following Aristotle, who united against Galileo and tried to persuade the Catholic Church to ban Copernican's theory.¹⁷⁵

This Heliocentric theory continues to develop even into the 20th century now. Sustained and supported by other inventors such as Kepler (1630), the laws of Kepler I (about orbit), the laws of Kepler II (about the realm of the orbit), and Kepler III on the scale of the planetary revolution.¹⁷⁶

Western astronomy was familiar only with the theory that Kepler and Copernicus built after the geographic theory collapsed without considering Ibn Shatir's theory that first mapped the movements of planets in space, a theory which the modern world believes to belong to Kepler and Copernicus.¹⁷⁷

Kepler's laws deal with the motion of celestial bodies. Here is Kepler's law. The law that can explain the motion of planetary orbits is Kepler's law. Kepler

¹⁷⁴ Accessed from <https://www.liputan6.com/global/read/2178017/19-2-1473-copernicus-dan-bantahan-teori-bumi-tak-bergerak> on Saturday, August 28, 2021 at 20.28 WIB.

¹⁷⁵ Stephen Hawking, *A Brief History of Time (Sejarah Singkat Waktu)*, p.273

¹⁷⁶ Siti Romlah, "Sains dan Teknologi dalam al-Qur'an", dalam *Jurnal Studi Islam*, Vol. 11 No. 2, Desember 2016, p. 23

¹⁷⁷ Wahyu Setiawan, "Geneologi Tradisi Ilmiah Astronomi Islam (Studi Historis Perkembangan Astronomi Muslim Pada Abad Pertengahan)", dalam *AKADEMIKA: Jurnal Pemikiran Islam*, Vol. 18, No. 18, Maret 2013, p. 3

¹⁷⁷ Wahyu Setiawan, "Geneologi Tradisi Ilmiah Astronomi Islam (Studi Historis Perkembangan Astronomi Muslim Pada Abad Pertengahan)", dalam *AKADEMIKA: Jurnal Pemikiran Islam*, Vol. 18, No. 18, Maret 2013, p. 3

formulated three laws that explain the motion of planets in the solar system or commonly known as Kepler's Laws. The following is a summary of Kepler's three laws.

1. Kepler's first law states: *"All the planets move in elliptical orbits around the sun with the sun at one of the foci of the ellipse."*
2. Kepler's second law states: *"An imaginary line joining the sun to the planet sweeps out equal areas in equal time."*
3. Kepler's third law states: *"The ratio of the square of a planet's period of revolution to the cube of the planet's average distance from the Sun is the same for all planets."*

Aphelion is the point at which the planet is furthest from the. Perihelion is when and the point at which the planet is closest to the sun. The average distance of the planet to the Sun = (perihelion + aphelion): 2.¹⁷⁸

Kepler's first law indicates that planetary orbits are circular in very special cases and are generally elliptical. The degree of the ellipse of an orbit is determined based on the so-called orbital eccentricity, where the orbit's shape depends on the eccentricity value. Kepler's second law explains that in an elliptical orbit, at the same time, at any point, the path of the planet-sun radius vector sweeps the same area. This law produces a model of the angular momentum isolation system. In this case, the planet's torque is zero because the gravitational force is parallel to the vector r , and the angular momentum is constant.

$$dA/dt = 1/2 L/M$$

¹⁷⁸ Accessed from <https://brainly.co.id/task/4599951> on Monday, August 30, 2021 at 07.31
WIB

Where L and M are constant, then the derivation of is constant so that it can be said that the sun-planet vector radius sweeps the same area with the same time interval. This is the essence of Kepler's second law, namely, the consequence of the conservation of angular momentum. Kepler's third law describes an explicit mathematical relationship between the orbital period of a planet and the size of its orbit. The square of the period of a planet revolving around the Sun (P) is proportional to the cube of its average distance from the Sun (a). Due to the gravitational force, the motion of the planet is circular so that the acceleration experienced is the centripetal acceleration so that it can be written:

$$\frac{T^2}{a^3} = \frac{4\pi^2}{GM}$$

Where a is the mean orbital radius

$$a = \frac{r_{aphelion} + r_{perihelion}}{2}$$

From the above equation, it can be said that the square of the orbital period is directly proportional to the cubic radius of the mean orbit.¹⁷⁹

Ibn al-Syāṭir was the scientist who first mapped the motion of planets in space, a theory that the modern world believes to belong to Kepler and Copernicus. The most comprehensive and successful model introduced in the fourteenth century was Ibn al-Syair's model: his model for all planets uses a combination of perfect circular motions in which each circle rotates uniformly around the center, Ibn al-Syāṭir outlines this in his treatise *Nihāyat al- Sūl Fi*

¹⁷⁹ Arif Bagus Prakoso dkk, "Pemodelan Gerak Orbit Planet Secara Komputasi Menggunakan Matlab", dalam *JIIF (Jurnal Ilmu dan Inovasi Fisika)*, Vol. 03, No. 01 (2019), p. 11-12

Tashih al-Uṣūl. Ibn al-Shaaṭir was also able to solve the problem of planetary distances and to provide more accurate data for astronomical observations.¹⁸⁰

Ibn al-Syaaṭir emphasized the equant observation as the assumption that the center of the orbit is not the Earth but the equant point. This concept later became the initial hypofinal project of Ibn al-Shaaṭir, that the celestial bodies do not revolve around the Earth but around the equant point, which is later replaced by the Sun.¹⁸¹

From his experience in the world of astronomy, Ibn al-Syaaṭir wrote a treatise entitled *Nihāyat al-Sūl Fi Tashih al-Uṣūl* completely overhauled Ptolemy's geocentric theory. However, he had not moved from the geocentric theory. Mathematically, Ibn al-Syaaṭir introduced the existence of an epicycle (inner circle system). Circle). Ibn al-Syaaṭir tried to explain how Mercury would move if Earth were the centre of the universe and Mercury moved around the Earth.¹⁸²

He is known for his planetary theory and the original creator of several astronomical instruments for observation and computation. In his planetary theory, he followed the theory of al-Thusi, who discovered the "*Thusi Couple*" and perfected it. Based on his theory, he corrected Ptolemy's theory of planetary motion. From his observations, he found that to be able to observe the outer planets - *Mirikh* (Mars), *Mustary* (Jupiter), and *Juhal* (Saturn) - the Earth could no longer be considered as the center of the circular motion of the planets (geocentric), he proposed the theory which makes the sun as the center of the circular motion of the planets (heliocentric). With this model, Ibn Syaatir

¹⁸⁰ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", dalam *Al-Marshad: Jurnal Astronomi Islam dan Ilmu-ilmu Berkaitan*, Juni 2018, p. 140

¹⁸¹ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", p. 141

¹⁸² Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", p. 138.

provided satisfactory solutions that had been considered complicated for two orbital bodies in the solar system, Atorrais (Mercury) and Earth. The results achieved by Ibn al-Shaatir are exactly the same as those made by Copernicus, and there can be no doubt that Copernicus had studied the works of Ibn al-Shaatir.¹⁸³

Muslim astronomers can be classified into two schools: *first*, the mathematically oriented schools of the eastern part of the Muslim world, and *second*, a philosophically oriented school with a base in the western region of the Muslim world. Astronomers from the east tradition adopted a strategy of mathematical reform in an attempt to solve the theoretical problems of the Ptolemaic model. Two useful and very influential mathematical tools were invented by the thirteenth-century astronomers, namely al-Tusi and al-Urdi. The first device, known in modern science as the *Thusi Couple*, produced a linear oscillation due to combining two uniform circular motions. It was used in various ways by many astronomers, including the Polish astronomer Nicolaus Copernicus. The second tool is the *Urdi Lemma*, a versatile mathematical tool invented by *al-Urdi* and used by his successors.¹⁸⁴

The way to apply this *Lemma* is to model the upper planets. For example, al-Urdi reverses the direction of motion and divides the eccentricity of the Ptolemaic model. It is thus able to produce uniform motion around the geometric center of the sphere while at the same time reproducing uniform motion around the Ptolemaic *equant* centre. To make optimal representations physically and

¹⁸³ Siti Nur Halimah, “Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaatir”, p. 139

¹⁸⁴ Siti Nur Halimah, “Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaatir”, p. 139

mathematically, other astronomers combined the two tools and found additional tools for their invention.¹⁸⁵

The most comprehensive and successful model introduced in the fourteenth century was Ibn al-Syaaṭir's model: his model for all planets uses a combination of perfect circular motions in which each circle rotates uniformly around the centre.

Ibn al-Syaaṭir states this in his treatise *Nihāyat al- Sūl Fi Tashih al-Uṣūl*. Ibn al-Syaaṭir was also able to solve the problem of planetary distances and to provide more accurate data for astronomical observations.¹⁸⁶

This period of Ibn al-Syaaṭir is missed in the history of world astronomy. After Ptolemy, people only knew Copernicus (1473-1543 AD). In his astronomical diagram, Ibn al-Syāṭir describes the movement of the planet Mercury. His findings at that time were considered as a continuous representation of the motions of the planets in the solar system. 12 Ibn al-Syaaṭir's geometric model was the first work that was truly superior to the Ptolemaic model because this model was better suited to empirical observations. In making his new model, Ibn al-Shatir tested it by making empirical observations.¹⁸⁷

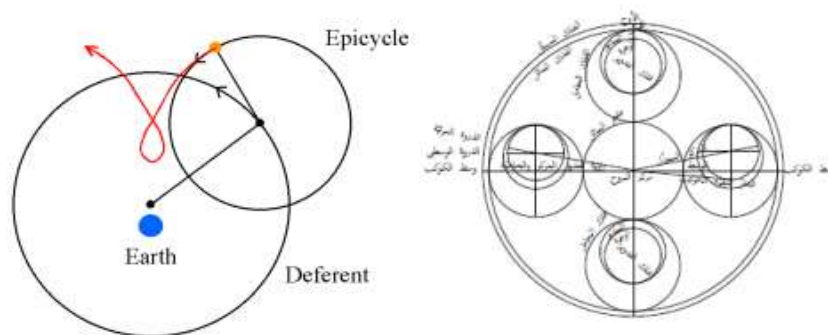
Ibn al-Syaaṭir began his planetary astronomy thinking by preparing a *zij*, an astronomical manual with tables. His thinking, which was strictly based on the Ptolemaic planetary theory, did not survive. In his later treatise *Ta'liiq al-Arsyaad (Comments on Observations)*, he described the observations and procedures by which he built his new planetary model and obtained new

¹⁸⁵ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", p. 139-140

¹⁸⁶ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", p. 140

¹⁸⁷ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaaṭir", p. 140

parameters. Not aware of any extant copies of this treatise from manuscript sources. Then, on *Nihāyat al-Sūl Fi Tashih al-Uṣūl* (A Final Inquiry Concerning the Rectification of Planetary Theory). Here, Ibn al-Syaatir presents the rationale behind his new planetary model. This thought can endure. Finally, Ibn al-Shaaṭir's *Az-Zij al-Jadiid* still exists in several manuscript copies, containing a collection of planetary tables based on his new theory and parameters. The point of Ibn al-Syaatir's planetary theory is in fact, the abolition of the Ptolemaic equant model with the second epicycle in its stead.¹⁸⁸

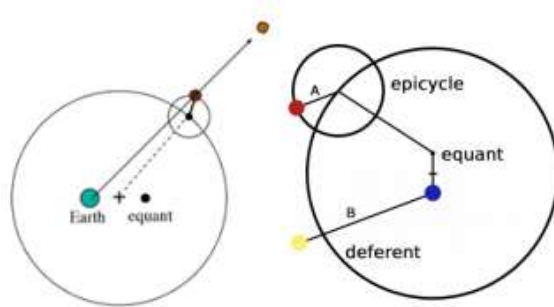


Pict. 1 Ptolemaic and Ibn Syaatir Orbit Models

In Ptolemy's geocentric theory, the terms deferent (epicycle) and equant are known. In a later stage, Ibn al-Syaatir emphasized the equant observation as the assumption that the center of the orbit is not the Earth but the equant point. This concept later became the initial hypofinal project of Ibn al-Syaatir, that the celestial bodies are not revolving around the Earth, but around the equant point, which is later replaced by the Sun.¹⁸⁹

¹⁸⁸ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaatir", p. 141

¹⁸⁹ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaatir", p. 141



Pict. 2 Orbit on Earth and Orbit at point Equant

His accurate observations made Ibn al-Syaatir sure of erasing the epicycle in the *Ptolemaic* model of the sun. Several Ibn al-Syaatir's models were reproduced a century and a half later by Nicolaus Copernicus in carrying out astronomical reforms in the Western scientific tradition.

Ibn al-Syaatir reformed the Ptolemaic model of the sun, moon, and planets. By introducing themselves the nonPtolemaic model eliminates the epicycle in the solar model, which eliminates eccentrics and equants. By introducing an extra epicycle to the planetary model via the Tusi-couple model eliminating all eccentrics, epicycles, and equants in the lunar model. He explains this in the book *Nihāyat al-Sūl Fi Tashih al-Uṣūl*.¹⁹⁰

The interpretation conveyed by Zaghlul al-Najjar is closely related to the theories above. Because the movement and rotation of the Earth as a planet in the solar system are included in the rules of the game in the theory of Kepler, Copernicus, and Ibn Syaair. The theory that discuss the movement of celestial bodies. Even the book of interpretational-*Aayaat al-Kauniyyah fii al-Qur'an al-Kariim* surah al-Anbiya 'verse 33 describes the planets that coincide with the Earth around the Sun. In addition to the revolutions of the planets, it turns out

¹⁹⁰ Siti Nur Halimah, "Benang Merah Penemu Teori Heliosentris: Kajian Pemikiran Ibn al-Syaatir", p. 142

that the Sun is also revolving around something, along with a large number of galaxies revolving around a certain point or center.

CHAPTER V

CONCLUSION

A. Conclusions

Based on the author's descriptions on the interpretation of Zaghlul al-Najjar in the *Tafsīr al-Āyāt al-Kauniyyah fī al-Qurʾān al-Karīm* book of QS. al-Anbiya' verse 33, as well as its relevance to the dynamics of the development of modern science, it can be concluded as follows:

1. Zaghlul al-Najjar interprets the verses of the Kauniyyah objectively, meaning not to impose the meaning of the verse according to his will. However, he adheres to the consistency of the principle that humans are only allowed to prove the scientific miracles of The Qur'an by using patented scientific theories, even though the possibility of developing facts will occur later. The four steps that Zaghlul al-Najjar applies to interpret The Qur'an include linguistic aspects, *asbābu al-nuzūl* to maintain context aspects, interconnecting verses, or the relationship between one verse discussed with another verse. Finally, there is an explanation from the scientific aspect. Zaghlul al-Najjar explain
2. There's a relevance contained between Zaghlul al-Najjar interpretation with scientific information in surah al-Anbiya 'verse 33 explains the change of day and night caused by the rotation of the earth, or the rotation of the earth on its axis. In the book of interpreter it is explained that the Earth does not only rotate but also evolves, namely the circulation of the earth around the Sun. Various kinds of earth movements occur in space. Earth is one of the heavenly bodies, more precisely, the planets in the solar system. The

movement of the Earth in space is included in several theories, including the Copernican theory, which explains heliocentric theory. Before Copernicus echoed his theory, there were Arab Muslim scientists who first mapped the movement of planets in space, a theory that the modern world believes belongs to Kepler and Copernicus. Not only the earth revolves around the sun, but also the other planets. Zaghlul al-Najjar also explained that the Sun and the galaxies revolve around the center of the universe, the name of which is currently unknown. So, the Sun also revolved. As the Sun advances, the planets simultaneously revolve around the Sun in their orbits, moving around the center of space.

B. Suggestions

The discussion of this final project regarding the study of Zaghlul al-Najjar's interpretation of the rotation of the Earth in Surah al-Anbiya 'verse 33 in the Book of *Tafsīr al-Āyāt al-Kauniyyah fī al-Qur'ān al-Karīm* has been completed. Therefore, the author feels the need to include suggestions to add to the scientific treasures in the future. Here are the suggestions that the author presents:

1. Research similar to this needs to be continued with a more comprehensive discussion. The author recommends that future research can explore more extensive data regarding the movement and rotation of the earth in space. Because, after the author has researched this book, it turns out that there are still new things found in this discussion that are correlated with contemporary science.
2. It is necessary to develop a theory regarding the circulation of celestial bodies, not only the earth, even all objects in space around the center of the universe.

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