

Scientific Exegesis of Surah An-Nur, Verse 40: Analyzing the Maritime Metaphor

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Abstract

This study examines the maritime metaphor in Surah An-Nur, Verse 40, through a comparative analysis of classical tafsīr and modern scientific exegesis. The objective is to analyze how traditional spiritual interpretations of this verse correspond with contemporary oceanographic discoveries. The research employs a qualitative descriptive-analytical method with content analysis, systematically comparing classical exegetical works (al-Ṭabarī, Ibn Abī Ḥātim, Muqātil bin Sulaymān, Yahyā bin Salām) with peer-reviewed marine science literature. The findings reveal that the verse operates effectively on two complementary levels: first, as a profound theological parable illustrating spiritual blindness according to classical commentators; and second, as an empirically accurate description corresponding to modern marine science discoveries, specifically, the exponential absorption of light spectra creating layered darkness in the aphotic zone (below 1,000 meters), and the phenomenon of internal waves traveling along density gradients. This dual coherence contributes to the discourse on I'jāz al-'Ilmī (Scientific Inimitability) by demonstrating how the Qur'anic description corresponds to oceanic phenomena that were historically unknowable to seventh-century observers. The study concludes that modern scientific interpretation enriches rather than replaces the classical spiritual meaning, establishing a hermeneutical bridge that maintains theological integrity while engaging contemporary scientific understanding.

Keywords: *I'jāz al-'Ilmī, Light Attenuation, Maritime Metaphor, Oceanography, Scientific Exegesis.*

Abstrak

Penelitian ini mengkaji metafora maritim dalam Surah An-Nur, Ayat 40, melalui analisis komparatif tafsīr klasik dan tafsir ilmiah modern. Tujuannya adalah untuk menganalisis bagaimana interpretasi spiritual tradisional dari ayat ini sesuai dengan penemuan oseanografi kontemporer. Penelitian ini menggunakan metode deskriptif-analitis kualitatif dengan analisis konten, secara sistematis membandingkan karya eksegetis klasik (al-Ṭabarī, Ibn Abī Ḥātim, Muqātil bin Sulaymān, Yahyā bin Salām) dengan literatur ilmu kelautan yang ditinjau oleh rekan sejawat. Temuan ini mengungkapkan bahwa ayat ini beroperasi secara efektif pada dua tingkat yang saling melengkapi, yaitu *pertama*, sebagai perumpamaan teologis yang mendalam yang menggambarkan kebutaan rohani menurut komentator klasik; dan *kedua*, sebagai deskripsi yang akurat secara empiris yang sesuai dengan penemuan ilmu kelautan modern, khususnya, penyerapan eksponensial spektrum cahaya yang menciptakan kegelapan berlapis di zona afotik (di bawah 1.000 meter), dan fenomena gelombang internal yang bergerak di sepanjang gradien kepadatan. Koherensi ganda ini berkontribusi pada wacana tentang I'jāz al-'Ilmī (Inimitasi Ilmiah) dengan menunjukkan bagaimana deskripsi Al-Qur'an sesuai dengan fenomena samudera yang secara historis tidak dapat diketahui oleh pengamat abad ketujuh. Studi ini menyimpulkan bahwa interpretasi ilmiah modern memperkaya daripada menggantikan makna spiritual klasik, membangun jembatan hermeneutika yang menjaga integritas teologis sambil melibatkan pemahaman ilmiah kontemporer.

Keywords: *I'jāz al-'Ilmī, Metafora Maritim, Oseanografi, Penafsiran Ilmiah, Redaman Cahaya.*

A. Introduction

The Qur'an al-Karim, as the ultimate source of unshakable Islamic teachings, offers humanity not only a comprehensive divine guide to spiritual and moral life but also a profound framework for understanding the universe's complex, interconnected realities.

Throughout the history of Islamic civilization, Muslim scholars have consistently regarded this sacred text as an inexhaustible source of intellectual inspiration. This influence permeates a wide range of disciplines, from geography to physics and mathematics, often triggered by verses that poetically and precisely describe natural phenomena. From this rich intellectual tradition emerged a unique discipline of interpretation, known as *al-Tafsīr al-ʿIlmī*, or scientific exegesis.

In this realm, the mufasir sought to reconcile the descriptions contained in divine revelation with contemporary scientific discoveries, an effort that reflected a deep belief in the inherent harmony between revelation and reason. This study aims to contribute to the rapidly evolving discourse by analyzing the rich maritime metaphor in Surah An-Nur, Verse 40, which offers profound insights into darkness, depth, and complexity, with strong scientific and theological resonances.

The emergence of scientific exegesis as a structured and systematic movement can be traced back to the late 19th and early 20th centuries. This period was marked by a massive wave of Western modernization, which brought with it rapid advances in science and technology. Muslim scholars of the time faced a significant intellectual challenge: reconciling the truth of Islamic revelation with the rapid advances in scientific understanding of the world. They strive to show that Islam is not only compatible with scientific progress but can even be a source of inspiration and validation for scientific discoveries.¹ Although the tradition of referring to the verses of nature in the Qur'an has long existed, systematic attempts to attribute them to modern science gained momentum during this period.

One of the early figures who explicitly acknowledged the scientific dimension of Qur'anic knowledge was Imam al-Ghazālī (d. 505 H). In his work, he states that “this science is endless, and the Qur'an has a comprehensive reference to them”. This statement shows al-Ghazālī's view that the Qur'an contains fundamental principles that can be applied to various fields of science that continue to develop.

However, it is noteworthy that a more systematic attempt to apply scientific interpretation to the Qur'an is definitively attributed to Fakhr al-Dīn al-Rāzī (d. 606 H). In

¹ Ashimi, T. A. *Scientific approach in Quranic exegesis: The emergence and issues*. Journal of Contemporary Islamic Studies, 7(1) (2020). 45-62.

his monumental work, *Mafātih al-Ghayb* (The Keys of the Occult), al-Rāzī systematically integrates scientific and philosophical reasoning into his commentaries, setting a strong precedent for subsequent interpreters to explore the relationship between revelation and natural knowledge.² This pioneer laid the foundation for a growing tradition of scientific exegesis.

Later, in the 20th century, Sheikh Ṭanṭāwī Jawharī (1870-1940) emerged as one of the most influential figures in the development of scientific exegesis. Through his comprehensive work, he offered a scholarly interpretation of the entire Qur'an, carefully identifying and analyzing approximately 750 verses he believed addressed cosmological themes and natural phenomena. His work became an important milestone in the effort to link sacred texts with modern scientific understanding.³ Jawharī's approach paved the way for the next generation of scholars to delve deeper into the scientific potential contained in the Qur'an.

Contemporary studies of scientific exegesis continue to develop and are enriched by the works of modern scholars. One of them was Zaghlul El-Naggar, an Egyptian geologist who extensively documented the correlation between Qur'anic verses and modern scientific discoveries. El-Naggar argues that there are about 1,000 verses explicitly related to cosmology, representing about one-sixth of the Qur'an's total content.⁴ This argument highlights how broad the universe is discussed in the Qur'an. Further, the theological implications of the oceanographic concepts presented in the Qur'an have been the subject of interesting research.

Recent studies have identified at least 38 verses that specifically address maritime phenomena, with 18 verses that underscore key theological themes, including divine sovereignty, the power of creation, and the order of the universe.⁵ This shows that the Qur'an speaks not only of the ocean's physical aspects but also of its spiritual and philosophical meanings.

² Syarifuddin, M. A., & Azizy, J. *Thematic scientific interpretation of the Qur'an in Indonesia*. *Advances in Social Science, Education and Humanities Research*, 261 (2018), 124-128.

³ Supriadi, A. *Integrating Qur'an and science: Epistemology of Tafsir Ilmi in Indonesia*. *Refleksi*, 16(2) (2017), 149-186.

⁴ Al-Najjār, Z. R. *Tafsīr al-Āyāt al-Kawniyyah fī al-Qur'ān al-Karīm*. Dar al-Shurūq. (2008).

⁵ Lajnah Pentashihan Mushaf al-Qur'an. *The theological implication of oceanography concept in the Qur'an*. *Journal of Qur'anic Studies*, 25(2) (2023), 1-28.

In a broader context, research by Mutalib et al.⁶ highlights the relevance of scientific exegesis in addressing contemporary challenges facing humanity, suggesting that science-based interpretation can provide new perspectives and innovative solutions. Furthermore, the latest discoveries in oceanography have a remarkable resonance with the description of the Qur'an. For example, research by de Lavergne et al.⁷ showed that internal waves can explain the global pattern of mixing in the deep sea. This phenomenon, which is complex and difficult to observe directly, is surprisingly described with precision in the maritime metaphor discussed in this study, namely Surah An-Nur, Verse 40. This provides strong empirical evidence of the accuracy of natural observations in sacred texts.

The verse that is the main focus of the analysis in this study is Surah An-Nur (24:40), which reads:

أَوْ كَظُلُمَاتٍ فِي بَحْرٍ لُجِّيٍّ يَغْشَاهُ مَوْجٌ مِّنْ فَوْقِهِ مَوْجٌ مِّنْ فَوْقِهِ سَحَابٌ ۚ ظُلُمَاتٌ بَعْضُهَا فَوْقَ بَعْضٍ إِذَا أَخْرَجَ يَدَهُ لَمْ يَكِدْ

The translation, according to T. Uthmani, is: “Or (their deeds) are like the pitch darkness of the deep sea (*baḥr lujjiyy*), which is covered by the waves, on which there are more waves, above them there are clouds, layers of darkness, one on top of the other. When he took out his hand, he could hardly see it; and whoever is not made by Allah has light, then he does not have any light”.

The metaphor described in this verse is powerful and multi-dimensional. The description “deep sea” (*baḥr lujjiyy*) refers to the vast and immeasurable depths of the sea, an environment that is inherently dark and full of mystery. The phrase “overwhelmed by waves, on top of which there are waves again” (*yaghṣāhu mawjun min fawqihī mawjun*) visually describes layers of waves that are stacked on top of each other, creating turbulence and instability. At its peak, the addition of “above it are clouds” (*min fawqihī ṣaḥābun*) and “layers of darkness, one on top of the other” (*ẓulumātun ba'duhā fawqa ba'din*) reinforces the image of total and oppressive darkness, where sunlight cannot penetrate to the depths.

This condition is described as so intense that a person “if he puts out his hand, he can hardly see it”. This picture is not merely a poetic description of the physical condition of the deep sea, but it is also a profound analogical metaphor for the spiritual and intellectual state of a person lost in the darkness of ignorance, shirk, or disobedience, where the “light” of divine truth and guidance is incapable of penetrating into his heart.

⁶ Mutalib, L. A., et al. *Scientific exegesis of Al-Quran and its relevance in dealing with contemporary issues*. International Journal of Recent Technology and Engineering, 8(2S11) (2019), 575-581.

⁷ de Lavergne, C., et al. Interacting internal waves explain global patterns of interior ocean mixing. *Nature Communications*, 15(1) (2024), 1-12. <https://doi.org/10.1038/s41467-024-51503-6>

This study argues that the layers of darkness in the deep sea described in Surah An-Nur, Verse 40, have striking parallels with modern oceanographic phenomena, particularly those related to the ocean's vertical structure and the propagation of light below the surface. The concept of "waves on top of waves" can be interpreted not only as surface waves but also as a representation of the complex dynamics of ocean currents and density layers, all of which contribute to light-penetration resistance. The layer of clouds above it further reduces the sunlight reaching sea level, exacerbating the darkness at depth. A critical analysis of this verse will explore the potential for more in-depth scientific interpretation, comparing the Qur'an's description with contemporary understandings of ocean hydrodynamics, underwater optics, and thermal stratification and salinity.

Therefore, this study aims to: (1) identify and analyze in detail the descriptive elements in the maritime metaphor of Surah An-Nur, Verse 40; (2) explore how modern scientific discoveries, particularly in the fields of oceanography and light physics, can provide a richer and deeper understanding of these descriptions; (3) discuss the theological implications of the use of this metaphor in the context of spiritual and moral guidance; and (4) underlining the contribution of scientific exegesis in strengthening Muslims' belief in the truth of the Qur'an as the divine word that is in harmony with the reality of the universe. By analyzing this verse through scientific and theological lenses, this research aims to contribute to a more comprehensive understanding of the Qur'an and its enduring relevance to humanity.

B. Research Method

This study adopts a qualitative research design with a descriptive-analytical approach, enriched by comparative content analysis. This approach was chosen to enable an in-depth exploration of the nuances of meaning in the literature and to identify patterns and themes that emerge from comparing two domains of knowledge. Qualitative design enables rich contextual understanding, while a descriptive-analytical approach facilitates the structured presentation of findings and their critical interpretation. Comparative content analysis, a key technique, allows the identification of similarities, differences, and potential convergence among concepts across different corpora.

This methodology systematically examines two fundamentally different data corpora, classical Islamic exegesis literature and contemporary marine science documentation. The selection of these two corpora is based on the potential for a rich dialogue between the tradition of theological interpretation and empirical scientific

discoveries, particularly regarding natural phenomena. Primary sources for classical exegesis include monumental works such as *al-Ṭabarī's Jāmi' al-Bayān*, *Ibn Abī Abī Ḥātim's Tafsīr al-'Aẓīm*, Muqātil's *Tafsīr Muqātil bin Sulaymān*, and *Yahyā bin Salām's Tafsīr Yahyā bin Salām*. These works were chosen for the depth of analysis, the scholarly authority of the mufasirs, and their extensive influence on the tradition of interpretation.

For scientific data, this study draws on peer-reviewed marine science literature, focusing on two specific areas: optical oceanography⁸ and internal wave dynamics⁹. This literature was chosen for its relevance to explaining physical phenomena in the ocean that may have conceptual resonances with descriptions of nature in religious texts.

The analysis was carried out in three interrelated stages. The first stage involves an in-depth content analysis of classical interpretive works to identify descriptions, interpretations, and narratives of relevant natural phenomena. The second stage focuses on examining the contemporary oceanographic literature to extract scientific findings, models, and descriptions of physical phenomena in the oceans. The third stage, at the core of comparative analysis, involves evaluating the correspondence and discrepancies between the theological meanings explored in the interpretation and the scientific phenomena described in the marine literature.

These comparisons aim not only to identify literal similarities but also to uncover metaphors, analogies, or conceptual principles that may complement each other or offer a new perspective. The critical analysis will focus on how classical interpretations, which are often symbolic or theological, can engage with empirical and mathematical scientific explanations, and on their implications for understanding the universe in both traditions.

C. Results and Discussion

Convergence of Spiritual Metaphors and Physical Phenomena

Verse 40 of Surah An-Nur, which describes a parable of the darkness in the deep sea, has long been the subject of profound interpretation among classical scholars. This parable is

⁸ Jerlov, N. G. (1967). Optical studies of ocean water. *Oceanography and Marine Biology Annual Review*, 5, 89-114; Kirk, J. T. O. (2011). *Light and Photosynthesis in Aquatic Ecosystems* (3rd ed.). Cambridge University Press; Mobley, C. D. (1994). *Light and Water: Radiative Transfer in Natural Waters*. Academic Press.

⁹ Apel, J. R. (1987). *Principles of Ocean Physics* (2nd ed.). Academic Press; Helfrich, K. R., & Melville, W. K. (2006). Long nonlinear internal waves. *Annual Review of Fluid Mechanics*, 38, 395-425; Pinet, P. R. (2019). *Invitation to Oceanography* (8th ed.). Jones & Bartlett Learning; de Lavergne, C., et al. (2024). Interacting internal waves explain global patterns of interior ocean mixing. *Nature Communications*, 15(1), 1-12.

generally understood as a spiritual allegory that describes the mental state of those who deny the truth (disbelievers).

However, in recent decades, this interpretation has expanded with the advent of *the I'jāz al-'Ilmī* (scientific miracles of the Qur'an) approach, which seeks to establish a correspondence between the Qur'an's descriptions and modern scientific discoveries. This section of results and discussion will elaborate in depth on how classical interpretations rooted in spiritual meaning converge with empirical evidence from modern marine science, and will analyze the implications of this convergence for our understanding of the verse and the validity of *I'jāz al-'Ilmī*'s claims.

1. Foundations of Classical Hermeneutics: “The Sea of Spiritual Darkness”

Classical interpretation of verse 39-40 of Surah An-Nur

وَالَّذِينَ كَفَرُوا أَعْمَالُهُمْ كَسَرَابٍ بِقِيَعَةٍ يُحْسِبُهُ الظَّمَانُ مَاءً حَتَّىٰ إِذَا جَاءَهُ لَمْ يَجِدْهُ شَيْئًا وَوَجَدَ اللَّهَ عِنْدَهُ فَوَفَّاهُ حِسَابَهُ
وَاللَّهُ سَرِيعُ الْحِسَابِ ﴿٣٩﴾

“...And the disbelievers, their deeds are like a mirage, which is thought to be water by the thirsty person, when he comes to it, he finds nothing, and he finds Allah by his side, then Allah gives them a full reckoning. And Allah is very quick in His calculations. –

أَوْ كَظُلُمَاتٍ فِي بَحْرٍ لُجِّيٍّ يَغْشَاهُ مَوْجٌ مِّنْ فَوْقِهِ مَوْجٌ مِّنْ فَوْقِهِ سَحَابٌ ظُلُمَاتٌ بَعْضُهَا فَوْقَ بَعْضٍ إِذَا أَخْرَجَ يَدَهُ لَمْ
يَكِدْ يَرهَا وَمَنْ لَّمْ يُجْعَلِ اللَّهُ لَهُ نُورًا فَمَا لَهُ مِن نُّورٍ ﴿٤٠﴾

“Or like pitch darkness in the deep sea, which is covered by waves, on which the waves (again), on which (again) the clouds; pitch black in layers, when he put out his hand, he could hardly see it. And whoever is not given light (guidance) by Allah, then he has no light at all”.

The verse referenced in the original text is Surah An-Nur, Verse 40. Classical interpretations of this verse focus on the metaphor of the deep sea and the multilayered darkness as reflections of the spiritual condition of those who reject divine guidance. Early mufasirs, such as Ibn Abbas, reported by Ibn Abī Ḥātim, provided a solid hermeneutical foundation. Ibn Abbas stated, “The deep sea is interpreted as the heart of man, and darkness is interpreted as deeds. “Darkness, one above the other’ refers to the veil that covers the heart, hearing, and vision; this is similar to His saying that “Allah has locked up their hearts and hearing” [Al-Baqarah: 7].¹⁰

This interpretation established a fundamental metaphorical framework that subsequent scholars later developed. The concepts of “heart” as a container for accepting truth and

¹⁰ Ibn Abī Ḥātim, ‘A. R. Tafsīr al-Qur’ān al-‘Azīm (3rd ed.). Maktabat Nizar Mustafa al-Baz. (1998).

“darkness” as a symbol of disobedience or rejection of revelation are central. Ibn Abbas implicitly connects this spiritual condition with another verse in the Qur'an (Al-Baqarah: 7), which describes the locking of the hearts and ears of the disbelievers, reinforcing the idea of multi-layered spiritual barriers.

Yaḥyā ibn Salām gives a more detailed enumeration of these layers of darkness, attributing them to the perceived physical elements: “Darkness (*zulumāt*) means the darkness of the ocean, the waves, the clouds, and the night itself.” The addition of elements such as waves and clouds suggests an attempt to create a more visual, layered image, though it remains within the framework of metaphor. As-Suddi then adds a more explicit spiritual dimension, stating that the bodies, chests, and hearts of the disbelievers are all dark: “his body is filled with doubt, his chest is filled with skepticism, and his heart is filled with polytheism.” It deepens the understanding that darkness is not only the absence of physical light, but also inner turmoil and the heresy of the faith.

Muqātil bin Sulaymān continued this elaboration by more clearly distinguishing between existential darkness and inner darkness: By “darkness”, He refers to the darkness in which the unbeliever lives, and the deep sea represents the heart of the unbeliever... So, it is the darkness of the clouds, the darkness of the sea, the darkness of the night, and the darkness of the waves”.¹¹ Muqātil explicitly states that the “deep sea” is a metaphor for the heart of the unbeliever, while the various other elements of darkness (clouds, sea, night, waves) reflect the state of error and ignorance that surrounds it. This indicates awareness of the multi-dimensional darkness experienced by the person who rejects revelation.

Imam al-Ṭabarī, a prominent figure in classical commentary, elegantly synthesized these various interpretations. He stated: “Allah has given another parable about the actions of the disbelievers. He declared that the actions of these unbelievers, including their mistakes, corruption, error, confusion, and lack of direction, were like darkness in the vast ocean... He uses the deep sea as a metaphor for the hearts of unbelievers and darkness as a metaphor for the actions of those who refuse to believe”.¹² Al-Ṭabarī emphatically underlines the verse’s main theological function: a powerful parable of the serious consequences of opposing divine guidance. The layered darkness describes not only physical inability to see, but also an inability to understand spiritual truth, confusion in action, and existential emptiness.

¹¹ Muqātil bin Sulaymān. Tafsīr Muqātil bin Sulaymān. Dar Ihya' al-Turath. (2002)., Yaḥyā bin Salām. (2004). Tafsīr Yaḥyā bin Salām. Dar Al-Kotob Al-Ilmiyah.

¹² al-Ṭabarī, M. J. Jāmi' al-Bayān 'an Ta'wīl Āy al-Qur'ān. Dar Hajar. (2001).

Overall, the classical interpretation builds a strong metaphorical foundation, in which the deep sea symbolizes the depths of a lost heart, and the layered darkness symbolizes the accumulation of sin, ignorance, apostasy, and rejection of the truth. This parable aims to remind people of the terrible spiritual conditions that await those who choose to turn away from God's way.

2. Physical Oceans and Hidden Phenomena

I'jāz al-'Ilmī's approach adds a new dimension to the interpretation of this verse by connecting it to newly discovered physical phenomena in the ocean through modern scientific research. Abdul Salam bin Muhammad Bhutwi is among the figures who sought to expand this interpretation into the scientific realm. He stated, "This example can be interpreted as the fact that the thickness of the water causes the deep-sea waters to become very dark. According to recent research, light no longer passes through the depths of the ocean beyond a certain point. When there are waves, the darkness increases, and when the clouds are above the waves, the darkness reaches its highest point".¹³ This statement claims that the Qur'anic metaphor accurately describes maritime phenomena confirmed by modern oceanography.

To analyze this claim in more depth, we need to outline two main aspects of this description that have scientific correspondence: (a) the phenomenon of light attenuation that creates layered darkness, and (b) the phenomenon of internal waves that create a layer of waves beneath the surface.

a. Light Attenuation and Multi-Layered Darkness

The phrase "darkness, one over the other" (*zulumātun ba'duhā fawqa ba'd*) corresponds appropriately to the scientific phenomenon of light absorption in the seawater column. Research in marine optics has conclusively shown that sunlight is absorbed exponentially as it penetrates seawater. This absorption is not uniform for all wavelengths (colors) of light. Various wavelengths are absorbed at different rates and depths.¹⁴

- 1) *Red Light*, With the longest wavelength (620-750 nm), red light is absorbed the fastest, generally within the first 10 meters of the surface.
- 2) *Orange and Yellow Light*, This light can penetrate to depths of 30-50 meters.

¹³ Bhutwī, 'A. S. *Tafsīr al-Qur'ān al-Karīm*. Dar al-Andalus. (2007).

¹⁴ Jerlov, N. G. (1967). *Optical studies of ocean water*. *Oceanography and Marine Biology Annual Review*, 5, 89-114; Mobley, C. D. (1994). *Light and Water: Radiative Transfer in Natural Waters*. Academic Press.

- 3) *Green light*, the most efficient color for photosynthesis, can penetrate to depths of about 70-100 meters.
- 4) *Blue light*, with the shortest wavelengths, is the most capable of penetrating the depths of the sea—it can reach up to 200 meters in clear ocean waters.¹⁵

This sequential absorption process creates “layers” of light that decrease in intensity with increasing depth. Under the photic zone (where sunlight is sufficient for photosynthesis) lies the aphotic zone, which usually begins at depths below 1,000 meters.¹⁶ In this zone, total darkness predominates. The description in the verse, “if he put out his hand, he could hardly see it,” accurately describes the conditions of visibility so poor at this depth that even the light from one's own hand was almost unrecognizable.

Further research by oceanographers such as S.Q. Duntley¹⁷ and standard textbooks on marine optics¹⁸ discuss in detail the spectrum of light absorption and scattering in different types of seawater. They confirmed that the deeper the water, the less light it can penetrate, and that the remaining light spectrum is increasingly dominated by blue. The presence of suspended particles (such as mud, plankton) can accelerate the absorption and scattering of light, which in the context of this verse can be analogized to the “clouds” mentioned as an additional layer of darkness. This shows that the Qur'an's description of layered darkness is not a vague poetic depiction but rather a highly accurate phenomenological account of physical reality in the deep sea.

b. Internal Waves Phenomenon

The description “a wave, on which there are waves (again)” (*mawjun min fawqih mawj*) or, in other translations, “covered by waves, on which are waves (again)” can be scientifically interpreted to refer to the phenomenon of internal waves. In contrast to surface waves visible to observers, internal waves are large oscillations below sea

¹⁵ Kirk, J. T. O. (2011). *Light and Photosynthesis in Aquatic Ecosystems* (3rd ed.). Cambridge University Press; Wozniak, B., & Dera, J. (2007). *Light Absorption in Sea Water*. Springer.

¹⁶ Pinet, P. R. (2019). *Invitation to Oceanography* (8th ed.). Jones & Bartlett Learning.

¹⁷ Duntley, S. Q. (1963). Light in the sea. *Journal of the Optical Society of America*, 53(2), 214-233.

¹⁸ Kirk, J. T. O. (2011). *Light and Photosynthesis in Aquatic Ecosystems* (3rd ed.). Cambridge University Press.

level that move along a density gradient, that is, the boundaries between water layers of different temperatures or salinities (called *pycnoclines* and *thermoclines*).¹⁹

These internal waves can have very large amplitudes, reaching 100 meters, but remain invisible at sea level. Contemporary research confirms that internal waves are universal in layered ocean waters worldwide. This phenomenon plays a crucial role in ocean mixing and energy transfer.²⁰

The claim “waves above waves” in this verse can be further analyzed. The waves on the surface are caused by wind blowing over them. However, below the surface, within a more stable mass of water, internal waves can move independently or interact with surface waves. The existence of these “waves under waves”, that is, surface waves above and internal waves below, was a concept that was completely unknown until the development of sonar technology and deep-sea instrumentation in the twentieth century.

Studies by scientists such as T. K. Chereskin²¹, P. F. J. L. de Lavergne, and others²² have mapped the distribution and characteristics of global internal waves. They show how different density layers in the ocean can support different types of internal waves, creating complex structures beneath the surface. In the context of the verse, the presence of internal waves can contribute to chaos and instability in the ocean, which can be metaphorically associated with the spiritual turmoil and inner confusion of the disobedient.

This compatibility between the description of the Qur'an and the oceanographic reality is a strong argument for the proponents of *the theory of I'jāz al-'Ilmī*. The verse describes a complex and layered phenomenon that could only be scientifically understood with advanced technology not available in the 7th century AD.

¹⁹ Apel, J. R. (1987). *Principles of Ocean Physics* (2nd ed.). Academic Press; Helfrich, K. R., & Melville, W. K. (2006). Long nonlinear internal waves. *Annual Review of Fluid Mechanics*, 38, 395-425.

²⁰ Garrett, C., & Munk, W. (1979). Internal waves in the ocean. *Annual Review of Fluid Mechanics*, 11(1), 339-369; de Lavergne, C., et al. (2024). Interacting internal waves explain global patterns of interior ocean mixing. *Nature Communications*, 15(1), 1-12.

²¹ Chereskin, T. K. (1995). Direct measurement of the effect of internal waves on upper ocean acoustic propagation. *Journal of the Acoustical Society of America*, 97(1), 211-219.

²² de Lavergne, C., et al. (2024). Interacting internal waves explain global patterns of interior ocean mixing. *Nature Communications*, 15(1), 1-12.

3. Bridging Hermeneutics and Empirical Evidence

An in-depth analysis of the convergence between classical interpretation and modern scientific findings reveals several crucial points:

a. The Harmony of Spiritual Metaphors and Physical Reality

The main finding of this analysis is the remarkable harmony between the spiritual metaphors advanced by classical scholars and the physical phenomena described by modern marine science.

- 1) *The Deep Sea as a Lost Heart*. The classic interpretation that identifies the “deep sea” as the lost heart of man remains relevant. The depths and darkness of the sea visually reflect the depth of confusion, doubt, and spiritual alienation experienced by a person who denies the truth.
- 2) *Layered Darkness as an Accumulation of Error and Ignorance*. The concept of “darkness, one on top of the other” fits perfectly with the layered absorption of light in the ocean. Metaphorically, this can be interpreted as the accumulation of sin, ignorance, errors of faith, and rejection of divine guidance, which prevent the light of truth from reaching the heart. Each layer of physical darkness has its equivalent in the layer of spiritual untruth.
- 3) *Waves and Clouds as Obstacles*. The phenomenon of visible surface waves, the potential for internal waves beneath, and the presence of clouds in the atmosphere that block sunlight can be analogous to the various obstacles humans face in seeking the truth. These can be worldly temptations, negative environmental influences, internal doubts, or even false doctrines that mask divine truth.

Scientific interpretations do not contradict this spiritual reading; rather, they enrich it. By showing that the physical phenomena described in the verse are empirically accurate, *I'jāz al-'Ilmī* strengthens the credibility of the Qur'an's account. This shows that the Qur'an not only speaks in spiritual metaphor but also presents an accurate picture of the reality of the universe.

b. *I'jāz al-'Ilmī's Criteria in Historical Specificity and Impossibility*

The *theory of I'jāz al-'Ilmī* often refers to two main criteria for identifying indications of miracles in descriptions of nature: extreme specificity and historical impossibility of knowing.

- 1) *Extreme Specificity*. The Qur'an's descriptions of “layered darkness” and “waves on waves” are not general or vague descriptions. This is a very specific description of a complex phenomenon in the deep-sea environment. The phenomenon of internal light and wave absorption has highly detailed characteristics that can only be observed and understood through careful scientific observation and specialized instrumentation.
- 2) *Historical Improbability*. The phenomenon of gradual absorption of light and the existence of massive internal waves below the surface was impossible to observe or understand by the Arabs in the 7th century AD. In those days, knowledge of the sea was limited to the shallow surface and depths that sailors could reach. Concepts such as density gradients, thermoclines, and invisible internal waves are completely foreign concepts. This knowledge can only be revealed through technological advances such as sonar, underwater profilometers, and oceanographic satellites.

The combination of these two criteria—the specificity of the description and the impossibility of knowing at the time of revelation—forms the basis of the argument for the proponents of *I'jāz al-'Ilmī*. They argue that only sources of knowledge that transcend the limits of human time and space can present such descriptions.

c. A contrasting comparison between the Classical and Modern Approaches

It is important to compare and contrast classical and modern interpretive approaches:

- 1) *Focus*. Classical interpretations focus on theological and moral functions, explaining the spiritual consequences of disbelief. Modern interpretation, through the lens of *I'jāz al-'Ilmī*, adds an epistemological and factual dimension, demonstrating the Qur'an's conformity with scientific knowledge.
- 2) *Sources of Authority*. For classical interpreters, the primary authorities are the Qur'an itself, the prophetic tradition (*sunnah*), and the collective understanding of the companions and *tabi'in*. For *supporters of I'jāz al-'Ilmī*, the additional authority is a modern scientific discovery that is considered to confirm the truth of the Qur'an.

- 3) *Potential Bias*. Classical interpretive approaches, although rooted in sacred texts, can be influenced by the cultural and scientific understandings of their time. However, classical interpreters are generally more careful in associating metaphors with unproven natural phenomena. On the other hand, *I'jāz al-'Ilmī*'s approach risks imposing scientific interpretations on the text (eisegesis) or selecting scientific evidence that aligns with the text (confirmation bias). It is important to note that not all claims of *I'jāz al-'Ilmī* are universally accepted by scientists or theologians.

d. Criticism and Challenges to *I'jāz al-'Ilmī*

Although interesting, *I'jāz al-'Ilmī*'s approach also faces significant criticism and challenges:

- 1) *Hermeneutic Issues*. Some critics argue that linking Qur'anic verses to modern scientific discoveries can obscure their original spiritual and theological meanings. Focusing on the scientific aspect can distract from fundamental moral and spiritual messages.
- 2) *The Development of Science*. Science is constantly evolving. Today's scientific discoveries could be revised or refuted in the future. If a verse is associated with a scientific theory that later proved false, it can undermine miracle claims.²³
- 3) *Arabic Ambiguity*. Classical Arabic, like any other language, has a wealth of meaning and potential for ambiguity. Interpreting words like “*zulumāt*” (darkness) or “*mawjun*” (waves) as specific scientific references can be challenging. Skeptical scholars argue that such an interpretation results from *eisegesis*, i.e., the incorporation of pre-existing meanings from the outside into the text, rather than *exegesis*, i.e., the extraction of meanings contained in the text.
- 4) *Accepted Methodology*. Not all scientific or theological communities accept *I'jāz al-'Ilmī* as a valid interpretive methodology or as convincing evidence of miracles. Some argue that the Qur'an is a book of spiritual and legal instruction, not a science textbook.

²³ Hasnain, S. A. (2014). The Qur'anic concept of Ijaz: An overview. *Al-Hikmah: Journal of Islamic Studies*, 6(1), 1-17.

4. Theory Integration and Wider Implications

The integration of theory in this discussion draws on classical hermeneutics, modern oceanography, and the theoretical framework of *I'jāz al-'Ilmī*.

- 1) *Hermeneutic Theory*. The concept of hermeneutics, especially as it relates to the interpretation of sacred texts (as developed by classical scholars), provides a basis for understanding metaphorical and spiritual meanings.
- 2) *Physical Oceanography Theory*. The basic principles of marine optics and fluid dynamics (especially wave-related) provide a scientific framework for analyzing physical descriptions in verse.
- 3) *I'jāz al-'Ilmī Theory*. This theoretical framework bridges the two disciplines above, proposing that the harmony between modern texts and science indicates the divinity of the Qur'an.

The implications of this convergence are wide-ranging:

- 1) *Strengthening Muslims' Beliefs*. For many Muslims, *I'jāz al-'Ilmī* can serve to strengthen their belief in the truth of the Qur'an, showing that their holy book is in harmony with rational knowledge of the universe.
- 2) *Cross-Disciplinary Dialogue*. This approach encourages dialogue between science and religion, showing that the two need not contradict each other but can complement one another in the search for truth.
- 3) *Education and Da'wah*. These findings can be used in religious education and da'wah to provide relevant arguments for modern audiences who are increasingly scientifically educated.

However, it is important to maintain a balance. Glorifying the scientific aspect should not be to ignore the spiritual and moral messages that are at the core of the teachings of the Qur'an. As Al-Ghazali says (in the broader context of knowledge integration), wisdom can be found in many sources, including modern science, provided it is used wisely and critically.

5. Convergence as a Sign, Not Absolute Evidence

An in-depth analysis of Surah An-Nur, verse 40, reveals a striking convergence between classical spiritual interpretations and modern scientific discoveries regarding the deep sea. The classical mufasir accurately captures the metaphorical essence of this verse as a picture

of the inner darkness and spiritual perverseness of the disobedient, using the deep sea and layered darkness as powerful allegories.

The development of modern oceanography, which uncovered the phenomenon of gradual light absorption and the existence of internal waves, gave an astonishing empirical dimension to the Qur'an's description. The correspondence between the specific details in the verse and the physical reality that can only be understood through advanced technology is the basis for *the claim of I'jāz al-'Ilmī*.

However, it is important to recognize that this convergence should be understood as a “sign” or “indication” of the truth of the Qur'an, not as an irrefutable “absolute proof”. The approach of *I'jāz al-'Ilmī* should be carried out with methodological caution, avoiding the imposition of interpretation or confirmation bias. A balance between appreciation for the richness of spiritual meaning and recognition of the accuracy of natural descriptions is key. In the end, this verse serves a dual purpose: as an eternal reminder of the spiritual consequences of rejecting divine guidance for the individual, and as a source of awe for those who seek harmony between faith and rational knowledge, seeing in the wonders of the universe the reflection of the wisdom of its Creator.

D. Conclusion

This study conclusively shows that the maritime metaphor in Surah An-Nur, Verse 40, functions coherently in two complementary areas, thereby giving significant weight to the text's argument for divinity. The first area, as articulated in classical interpretation (*tafsīr*), highlights the verse's fundamental theological significance as a powerful parable of spiritual blindness. In this interpretation, the heart of the person who denies the truth is described as sinking into the abyss of ignorance and sin, making him incapable of receiving divine guidance. This aligns with a deep theological understanding of the spiritual consequences of rejecting revelation.

The second field, explored through modern scientific investigations, reveals the exact correspondence between the metaphor and the complex and previously inaccessible reality of oceanography. Specifically, the study attributes the metaphor to the phenomenon of light's exponential attenuation in water, which creates a layer of darkness, reflecting the depth of spiritual incomprehension. Further, the existence of internal waves moving along a density gradient below surface waves, as described by recent oceanographic research (e.g.,

Mignerey et al.²⁴), provides a powerful physical analogy for the movements and disturbances that are not seen in the spiritual depths described by the verse.

The rich combination of theological parables with two previously unknown scientific facts supports the argument that this maritime metaphor serves as a convincing indicator of the text's divine origin. The deep physical reality of the ocean provides an objective correlation to the subjective spiritual state described by classical commentators. This precision not only reinforces the validity of religious narratives but also affirms the divine knowledge preserved in the text, making it particularly relevant to contemporary audiences seeking deep theological insight and scientific coherence in scripture. This phenomenon, as described in the study of the interaction of light and seawater (Jerlov²⁵), suggests that this verse went far beyond the empirical understanding of its time. Therefore, this study concludes that Surah An-Nur, Verse 40, not only offers spiritual guidance but also provides verifiable proof of truth through the lens of modern science, enriching our understanding of the relationship between revelation and the universe.

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²⁴ Mignerey, P. C., et al. (2017). Observations of internal waves in the South China Sea. *Journal of Geophysical Research: Oceans*.

²⁵ Jerlov, N. G. (1976). *Marine Optics*. Elsevier Oceanography Series.

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