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# EPISTEMOLOGICAL INTEGRATION OF HISAB AND RUKYAT IN THANTAWI JAUHARI'S SCIENTIFIC EXEGESIS

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**Abstract**

*The difference in the determination of the beginning of the Hijri month in Indonesia reflects the epistemological difference between the hisab and rukyat methods, which are often positioned dichotomically. However, previous studies generally still place the integration of the two at the level of practical fiqh and have not specifically constructed the epistemological relationship between the concepts of ḥusbān and ahillah in the Qur'an. This study aims to analyze the epistemological construction of hisab and rukyat in the framework of Tantawi Jauhari's 'ilmi interpretation of QS. Jonah: 5 and QS. Al-Baqarah:189. This study uses a qualitative method of literature with a 'science interpretation' approach, through descriptive-analytical analysis of sources of interpretation and related scientific literature. The results of the study show that in Tantawi Jauhari's perspective, ḥusbān represents the regularity and precision of rational cosmic calculations, while ahillah shows an empirical dimension in the form of the visibility of the hilal as a marker of the time of worship. The two concepts are not oppositional, but form an integrative epistemological system. These findings contribute to strengthening the theoretical framework of the integration of revelation and science in interpretation, as well as provide a conceptual foothold for the development of a more coherent and dialogical model for determining the beginning of the Hijri month between hisab and rukyat.*

***Keywords:*** *Tafsir Ilmi; Sigh; Rukyat; Islamic Epistemology; Tantawi Jauhari; Cosmology of the Qur'an; Lunar calendar.*

**Abstrak**

*Perbedaan penetapan awal bulan Hijriyah di Indonesia mencerminkan perbedaan epistemologis antara metode hisab dan rukyat yang sering diposisikan secara dikotomis. Namun, kajian sebelumnya umumnya masih menempatkan integrasi keduanya pada tataran fiqh praktis dan belum secara spesifik mengonstruksi relasi epistemologis antara konsep ḥusbān dan ahillah dalam Al-Qur'an. Penelitian ini bertujuan menganalisis konstruksi epistemologis hisab dan rukyat dalam kerangka tafsir 'ilmi Tantawi Jauhari terhadap QS. Yunus:5 dan QS. Al-Baqarah:189. Penelitian ini menggunakan metode kualitatif kepustakaan dengan pendekatan tafsir 'ilmi, melalui analisis deskriptif-analitis terhadap sumber tafsir dan literatur ilmiah terkait. Hasil kajian menunjukkan bahwa dalam perspektif Tantawi Jauhari, ḥusbān merepresentasikan keteraturan dan presisi perhitungan kosmik yang bersifat rasional, sedangkan ahillah menunjukkan dimensi empiris berupa visibilitas hilal sebagai penanda waktu ibadah. Kedua konsep tersebut tidak bersifat oposisional, melainkan membentuk sistem epistemologis yang integratif. Temuan ini memberikan kontribusi pada penguatan kerangka teoretis integrasi wahyu dan sains dalam tafsir, serta memberikan*

*pijakan konseptual bagi pengembangan model penentuan awal bulan Hijriyah yang lebih koheren dan dialogis antara hisab dan rukyat.*

***Kata kunci:*** *Tafsir Ilmi; Hisab; Rukyat; Epistemologi Islam; Tantawi Jauhari; Kosmologi Al-Qur'an; Kalender Bulan.*

## INTRODUCTION

The difference in the determination of the beginning of the Hijri month in Indonesia is a recurring phenomenon that has an impact on the inconsistency in the implementation of Islamic holidays, especially Eid al-Fitr and Eid al-Adha. This condition is triggered by the methodological dichotomy between the use of rukyat embraced by Nahdlatul Ulama and the government and the hisab method of wujudul hilal applied by Muhammadiyah (Wahyudi, 2025). This polarization often emerges in the itsbat session and results in the initial determination of different Ramadan and Shawwal, thus causing confusion in the community. The urgency of the Single Hijri calendar is increasingly urgent to maintain social cohesion and legal certainty of Muslim worship (Holis et al., 2025). This condition shows that there is no integrative theological-methodological framework in determining the beginning of the month of qamariyah (NF, 2023) which is often complicated by the difficulty of reaching a consensus on the hilal visibility criteria at the national level (Yan Faisal, 2025).

The debate about the determination of the beginning of the Hijri month is not solely related to astronomical technical problems, but is rooted in differences in the epistemological framework in reading the relationship between revelation and cosmic phenomena. The fundamental problem lies in the meaning of QS. Jonah: 5 who affirms the regularity of the circulation of the sun and moon through the principles of ḥusbān and QS. Al-Baqarah:189 which explains the function of *Ahillah* As a marker of the time of worship, it is actually not in a conflicting relationship with each other (Koto et al., 2024). However, previous studies have tended to discuss the two verses separately without constructing an epistemological synthesis that integrates cosmic calculations and hilal visibility in one integrated conceptual framework. This research gap shows that there has not been a reconciliation model that is able to sit *husbān* and *Ahillah* as a complete epistemological system (Ilham, 2024). As a result, this pattern of partial understanding gives birth to a sustained methodological difference between hisab and rukyat, thus showing the lack of an integrated conceptual framework that integrates cosmic calculations and hilāl visibility in a single consistent mechanism for determining the timing of worship (Hasan, 2023).

To answer these problems, this study explores the perspective of Tafsir Ilmi Thantawi Jauhari through his monumental works *Al-Jawahir fī Tafsīr al-Qur'ān al-Karīm*. In his commentary, Tantawi Jauhari places natural phenomena as part of a cosmic system that is subject to the laws of order and can be studied scientifically

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(Jansen, 1974). This interpretation offers an integrated framework that places science not as a threat, but as an explanation for the miracles of the verses of the Qur'an (Khairuddin, 2024). Although a number of studies have addressed the integration of science and revelation in their interpretations, they have not specifically constructed a relationship *husbān* and *Ahillah* as an epistemological foundation for the integration of hisab and rukyat. In addition, Thantawi's idea of the order of the universe provides a strong foundation for the rationalization of the hisab method (Muhammad, 2022). This perspective is relevant for studying QS. Jonah:5 as a representation of the principles of cosmic order and calculation and QS. Al-Baqarah:189 as a marker of the empirical phenomenon of hilal.

A number of recent studies have discussed the issue of determining the beginning of the month of qamariyah from various perspectives. Jonah & Muhammad (2025), "Harmonization of Hisab and Rukyat in the Determination of the Beginning of the Hijri Month" concludes that QS. Al-Baqarah: 189 about *Ahillah* As Mawaqit emphasizes the function of the hilal as a time marker that requires the integration of observation and calculation. Other studies, (Nasir et al., 2024), "Hisab Rukyat in the Light of the Quran and Sunnah" affirms that QS. Jonah: 5 explicitly mentions the word "*Al-Hisab*" as an instrument of calculating time based on the manazil of the moon and sun. Afifi & Abbas (2022), "Moderate Way Implementing Rukyah and Hisab to Determine A New Moon in Ramadan" concludes that a moderate approach that integrates both methods is an inclusive solution in contemporary fiqh discourse. Adding to this, research on the implementation of new criteria shows that changes in astronomical standards require support for a more dynamic interpretation (Farras et al., 2025). Based on this analysis, the previous study was partial, non-integrative, and did not focus on Tantawi Jauhari's Tafsir specifically, thus opening up space for this research.

This research is here to fill this gap with the aim of examining and reconstructing the conceptual understanding of hisab and rukyat through the analysis of Tantawi Jauhari's scientific interpretation of QS. Jonah: 5 and QS. Al-Baqara: 189. This research is focused on trying to explain the epistemological relationship between the principle of regularity and cosmic calculation (*husbān*) and the phenomenon of hilal visibility (*ahillah*) as two concepts that complement each other in determining the beginning of the month of qamariyah. The formulation of the problem in this study is how Tantawi Jauhari's interpretation of QS. Jonah: 5 and QS. Al-Baqarah:189 in the framework of the interpretation of science, how the concepts *of ḥusbān* and *ahillah* are understood in the commentary, and how the integrative theoretical construction between hisab and rukyat can be formulated can be formulated. Thus, this research is expected to make a theoretical contribution in the form of an integrative Qur'an interpretation framework in understanding hisab and rukyat, as well as becoming a conceptual

reference for the development of a more comprehensive discourse on determining the beginning of the Hijri month.

## METHODS

This research uses a qualitative approach based on library *research* with a thematic interpretation approach (*maudhu'i*) combined with an 'imi tafsir approach. This design was chosen to examine the conceptual relationship between *husbān* and *ahillah* within the framework of the integration of hisab and rukyat through the analysis of the Qur'anic text and the interpretation of scholars. QS Selection. Jonah: 5 and QS. Al-Baqarah:189 is based on thematic criteria, namely (1) a verse that explicitly contains the concepts of cosmic calculation (*ḥusbān*) and the appearance of the hilal (*ahillah*), (2) its direct relevance to the Hijri dating system, and (3) its relevance to the discourse of integration between rational and empirical approaches in determining the beginning of the month. Thus, these two verses are positioned as key representations in constructing the epistemology of *hisab-rukyat*.

The data sources in this study are divided into primary and secondary sources. Specifically, in this study, it borrows an interpretation from Tantawi Jauhari in the book of Tafsir Jawāhir as a knife to analyze data. The primary source in this study is in the form of the text of the Qur'an (QS. Jonah: 5 and QS. Al-Baqarah:189) as the main object of analysis, as well as classical and modern tafsir books such as *Tafsir Jawāhir* by Tantawi Jauhari as the main basis of tafsir 'ilmi, *Al-Taḥrīr wa al-Tanwīr* as a representation of rational-linguistic interpretation, and *Al-Jāmiʿ li Aḥkām al-Qurʾān* as a fiqh-style commentary. In addition, linguistic books such as *Lisān al-'Arab* and *Al-Mufradāt fī Gharīb al-Qur'ān* are used to trace the lexical and semantic meanings of key terms. The secondary sources include academic books, indexed scientific journal articles, and astronomical literature that functions as a reinforcement of contextual analysis related to the integration of hisab and rukyat. The criteria for selecting sources are based on scientific authority, topic relevance, and direct relevance to the theme of the Hijri calendar and the interpretation of 'ilmi.

The data analysis procedure is carried out in a descriptive-analytical manner with systematic stages. First, identify key concepts in the verse, specifically the terms *ḥusbān* and *ahillah*, through linguistic and semantic analysis. Second, the collection and comparison of interpretations from various books of tafsir to see various perspectives, with an emphasis on the interpretation of Tantawi Jauhari as the main analytical knife. Third, contextualizing the meaning of verses with the approach of tafsir 'ilmi, which is to connect the cosmic concept and the phenomenon of the hilal with the principles of modern astronomy. Fourth, conceptual synthesis to build an epistemological relationship between hisab (rational) and rukyat (empirical). To maintain the validity of the data, this study

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uses the source triangulation technique by comparing various interpretations and scientific literature, and documentation is carried out through systematic recording of relevant citations, concepts, and findings to ensure data traceability and analysis consistency.

## RESULTS AND DISCUSSION

### The Epistemological Relationship *of Ḥusbān* and *Ahillah*

The Earth's rotation event results in the lunar cycle alternating every month. This phenomenon is certainly related to the sun which is the source of light for the sun. One month is the period of time from the appearance of the full moon to the next full moon. This does not allow the number of Qamariah calendars to exceed 30 days. In contrast to the Christian calendar, the rules for dismissal use the calculation of days in a year divided into 12 months (Lajnah Pentashihan, 2013).

The regularity of the lunar cycle and the resulting qamariyah dating system are not solely understood as astronomical phenomena, but also have a normative basis in the Qur'an. This is reflected in QS. Jonah: 5 and QS. Al-Baqarah:189 which explains the relationship between the circulation of celestial bodies and the system of determining time.(Faid, 2025).

يَسـَٔلُوْنَكَ عَنِ الْاَهِلَّةِۗ قُلْ هِيَ مَوَاقِيْتُ لِلنَّاسِ وَالْحَجِّۗ وَلَيْسَ الْبِرُّ بِاَنْ تَأْتُوا الْبُيُوْتَ مِنْ ظُهُوْرِهَا وَلٰكِنَّ الْبِرَّ مَنِ اتَّقٰىۚ وَأْتُوا الْبُيُوْتَ مِنْ اَبْوَابِهَاۚ وَاتَّقُوا اللّٰهَ لَعَلَّكُمْ تُفْلِحُوْنَ ١٨٩

Meaning: *They ask you (the Prophet Muhammad) about the crescent moon. Say, "It is a time for people and for Hajj." It is not a virtue to enter the house from behind him, but it is a virtue of the pious. Enter the houses from its gates, and fear Allah so that you may be blessed.*

هُوَ الَّذِيْ جَعَلَ الشَّمْسَ ضِيَاۤءً وَّالْقَمَرَ نُوْرًا وَّقَدَّرَهٗ مَنَازِلَ لِتَعْلَمُوْا عَدَدَ السِّنِيْنَ وَالْحِسَابَۗ مَا خَلَقَ اللّٰهُ ذٰلِكَ اِلَّا بِالْحَقِّۗ يُفَصِّلُ الْاٰيٰتِ لِقَوْمٍ يَّعْلَمُوْنَ ٥

Meaning: *He is the one who makes the sun shine and the moon shine. He is also the one who determines the places of his orbit so that you know the number of years and the calculation (time). God did not create it that way, except correctly. He explains the signs (of His greatness) to those who know.*

In *Lisān al-'Arab*ḥisāb is understood as a calculation activity that gives birth to precision and order, as well as being the basis for rational judgment of a matter, both material and non-material. This meaning is not limited to the numerical context, but it also includes proper consideration, sufficiency, and measurement (Manzur, 1990). In line with that, *al-Rāghib al-Aṣfahānī* in *Mufradāt Alfāẓ al-Qur'ān* asserts that ḥisāb refers to the systematic and precise use of numbers (al-Asfahani, 1975). Meanwhile, *Ahillah* in *Lisān al-'Arab* It is understood as the plural of hilāl, which is the crescent moon that appears at the beginning of its appearance. Emphasis on meaning *Ahillah* It is located in the aspect of initial visibility as a marker of the entry of a certain time, so it contains an observational dimension

that is closely related to the determination of time and human activity (Manzur, 1990).

Concept *ḥusbān* and *Ahillah* In the Qur'an, it represents two interrelated dimensions in the understanding of time and the circulation of celestial bodies. In tafsir *Al-Taḥrīr wa al-Tanwīr*, *Al-ḥisāb* In the verse it means the calculation that is already known, especially the calculation of days and months. This determination affirms the qamariyah calendar as the basis for determining the sharia year, which makes it easier for humans to regulate worship, travel, muamalah, and build civilization through the calendar system (Ibn Ashur, 1969). This shows that the Qur'an not only acknowledges the existence of a system of calculations, but also gives legitimacy to the use of amthematic ratios in understanding cosmic time. Thus, *husbān* serves as a rational-scientific basis in the epistemology of Islamic times (Izzi, 2024)

On the other hand, the Concept *Ahillah* in QS. Al-Baqarah verse 189 refers to the early stages of the appearance of the moon that can be observed directly by humans. *Ahillah* placed as an empirical phenomenon that acts as an indicator of time for the implementation of worship and socio-religious activities (Supratama et al., 2024). Ibn Katsir explained that Allah SWT made *Ahillah* (crescent moon/moon appearance) as a sign and time marker for humans to determine the time of worship such as fasting, iddah, and hajj, as well as changing the shape of the moon not as a description of technical astronomy, but as an indicator of time that can be known by humans according to the function of dividing the hijri month (Kathir, 1923). However, when compared to Al-Qurtubi, he added that the function of *Ahillah* it does not negate the aspect of astronomical order, but rather becomes an empirical manifestation of the cosmic system that God has established. This comparison suggests that the caldick mufassirs have hinted at an implicit relationship between observation (rukyat) and cosmic structure (hisab), although it has not been explicitly formulated as methodological integration (Maratoan et al., 2025)

In the scholarly commentary of Tantawi Jauhari, the concept of ḥusbān and *Ahillah* integrated as part of a harmonious cosmic system. Jauhari emphasizes that divine revelation and science complement each other, where natural phenomena such as the movement of the sun and moon reflect the cosmic order that God created with precision (Harahap et al., 2024). With this approach, *husbān* not only understood as a mathematical calculation, but as a representation of the divine cosmic laws, while *Ahillah* become a concrete form that can be accessed by humans through empirical experience (Syarif, 2025).

Meaning *ḥusbān* and *Ahillah* Integrally it shows that the difference in hisab and rukyat stems from variations in methodological approaches to the same astronomical system, not conflicts of principle (Budiwati & Anisah, 2025). The interpretation of science places calculation and observation as two epistemic

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elements that complement each other, because theory and empirical facts are understood to work reciprocally in building a scientific understanding of natural reality (Kuhn, 1970). Thus, *husbān* and *Ahillah* not two separate concepts, but two modes of knowledge in understanding time: *husbān* as a representation of rational cosmic order and *Ahillah* as an empirical manifestation. This relationship inherently supports the integration of hisab and rukyat because they are rooted in the same ontological system, namely the order of God's creation.

**Integrative Theoretical Construction of Hisab and Rukyat in the Perspective of Scientific Tafsir**

Synthesis of scientific interpretation of QS. Jonah: 5 and QS. Al-Baqarah: 189 shows that the determination of the beginning of the month of qamariyah rests on the integration between the legitimacy of hisab as a representation of cosmic order and rukyat as an expression of empirical phenomena, rather than on the methodological opposition of the two (Alfalaah, 2025). The principle of ḥusbān describes the precise and measurable order of the circulation of celestial bodies, while *Ahillah* represents the empirical aspects of such regularity that humans can observe. Both are understood as one system of knowledge of time that complement each other (Isfihani, 2023).

In QS. Jonah: 5, Allah SWT said:

هُوَ الَّذِيْ جَعَلَ الشَّمْسَ ضِيَاۤءً وَّالْقَمَرَ نُوْرًا وَّقَدَّرَهٗ مَنَازِلَ لِتَعْلَمُوْا عَدَدَ السِّنِيْنَ وَالْحِسَابَۗ مَا خَلَقَ اللّٰهُ ذٰلِكَ اِلَّا بِالْحَقِّۗ يُفَصِّلُ الْاٰيٰتِ لِقَوْمٍ يَّعْلَمُوْنَ

*"It is He who makes the sun shine and the moon shine, and He is the One who appoints the places of its orbits, so that you may know the number of years and the reckoning. God did not create such things but by right. He explains the signs (of His greatness) to those who know."*

The principle *of ḥusbān* in the above verse describes the precise and measurable circulation of celestial bodies. Meanwhile, the empirical aspect of the order is affirmed in QS. Al-Baqarah: 189:

يَسْـَٔلُوْنَكَ عَنِ الْاَهِلَّةِۗ قُلْ هِيَ مَوَاقِيْتُ لِلنَّاسِ وَالْحَجِّ ۗ

*"They ask you (Muhammad) about the crescent moon (ahillah). Say, "It is the (indicator) of the times for mankind and the Hajj." ...*

The dichotomy between hisab and rukyat in contemporary practice is more methodological than epistemological. This is because both refer to the same object, namely the circulation of the moon, but with different approaches. Hisab uses mathematical models to predict the position of the moon, while rukyat relies on visual observation to verify its existence. In the perspective of the philosophy of science, this relationship is in line with the relationship between theory and observation, where theory guides observation and observation tests theory (Kuhn, 1970).

In Islamic epistemology, hisab and rukyat represent two ways of knowing the order of the cosmos that originates from revelation. Nature is understood as

the Qur'an al-takwīnī, which is the manifestation of divine signs that can be read through mathematical ratios or empirical observations, without epistemological contradictions (Nasr, 1990). Thus, the dichotomy that has emerged so far is more due to a partial normative-jurisprudential approach, rather than to the epistemological structure of the Qur'an itself.

In astronomy, hisab is understood as a rational method that places the moon's circulation within the framework of mathematical calculations to determine its astronomical position, while rukyat functions as an observational method to ascertain the existence of the moon through direct observation on the western horizon at sunset (Kurniawan, 2010). However, the development of modern astronomy shows that the visibility of the hilal can also be scientifically predicted through certain criteria, thus strengthening the argument that hisab and rukyat are on the same methodological spectrum. (Mohammed), 2024)

From the above description of the concepts of hisab and rukyat in the framework of wakyu, the hisab-rukyat dichotomy does not have a strong ontological or epistemological basis in the Qur'an. Rather, they are two complementary approaches to understanding the same cosmic reality. Therefore, the integration of hisab and rukyat is not merely a practical compromise, but is a logical consequence of the structure of knowledge built by revelation.

**Integrative Theoretical Construction: Tafsir Ilmi as a Bridge**

The approach of scientific interpretation developed by Tantawi Jawhari in Tafsir al-Jawahir integrates the textual understanding of the Qur'an with the scientific knowledge that developed in his time, especially in interpreting kauniyah verses. Tantawi believes the Qur'an is a final revelation that is not only historically relevant, but has a depth of meaning that can be linked to modern science (Harahap et al., 2024). In this framework, the Tafsir ilmi functions as a bridge that connects the two, by interpreting the verses in a scientific framework without letting go of their normative dimension.

In the framework of the scientific interpretation of Tantawi Jauhari, QS. Jonah:5 is understood as an affirmation of cosmic order based on the principle of precise calculation. The determination of the sun as the source of light and the moon with its manzilahs is intended so that humans are able to know the number of years and the time system rationally. For Tantawi Jauhari, the difference between the lunar and solar systems does not show chaos, but rather the precision of God's creation in regulating the cosmos (Jauhari, 1922). This understanding is strengthened by the interpretation of the Qurṭubī which views the verse as legitimizing the orderly circulation of celestial bodies for the sake of regulating the timing of worship and human life. Thus, cosmic order is positioned as the epistemological foundation of time-determination in Islam, which integrates the dimension of revelation with natural reality in a coherent manner (al-Qurtubi, 1964).

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In the context of determining the beginning of the month of Hijri, hisab is used to predict the position and visibility of the hilal, while rukyat serves as empirical verification. This integration can be formulated in a three-stage model: (1) revelation as a normative basis, (2) hisab as rational elaboration, and (3) rukyat as empirical verification (Sakirman, 2022). This approach is also supported by the development of modern astronomical technology that increases the accuracy of hisab and the effectiveness of rukyat. From the perspective of scientific interpretation, this development is a form of actualization of the Qur'anic commands to understand cosmic signs rationally and empirically (Ansharullah, 2025).

The main theoretical contribution of this study is the formulation of an integrative paradigm of hisab-rukyat based on scientific interpretation, which places revelation, ratio, and empiricism in one coherent epistemological system. Thus, the interpretation of knowledge is not only a method of interpretation, but also a conceptual framework that is able to bridge methodological differences in religious practice (Daruhadi, 2024). In conclusion, the integration of hisab and rukyat is not just a practical compromise, but an epistemological consequence of the Qur'anic knowledge structure that combines cosmic order and empirical experience in a unified system of meaning.

## CONCLUSIONS AND SUGGESTIONS

This study confirms that from the perspective of the interpretation of 'ilmi, Tantawi Jauhari towards QS. Jonah: 5 and QS. Al-Baqarah:189, the concepts of ḥusbān and *ahillah* are not in oppositional relations, but form an integrative epistemological structure between the rationality of cosmic calculations and the empiricism of the observation of the hilal in the Islamic time system. These main findings show that the dichotomy of hisab and rukyat that has been developing is more the result of a partial reading of kauniyah verses, rather than a complete reflection of the epistemological framework of the Qur'an. Epistemologically, this study affirms that knowledge of time in Islam is built through the coherence between revelation, ratio, and empirical experience, thus opening up space for methodological integration between astronomical science and sharia norms. The novelty of this research lies in the construction of *the ḥusbān-ahillah relationship* as the basis of the integrative epistemological basis of hisab-rukyat, which has not been specifically elaborated in previous studies that tend to discuss integration at the practical level or operational fiqh. Thus, this research not only strengthens the position of the interpretation of 'ilmi as a bridge between revelation and science, but also offers a theoretical contribution to the development of the epistemology of interpretation as well as practical implications for the formulation of a policy for determining the beginning of the Hijri month that is more coherent, dialogical, and based on scientific integration.

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