

The problem of using astronomical calculations to determine the lunar months

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Abstract: The sighting of the crescent moon is considered one of the scientific issues of importance in Islamic law, as many of the rulings of worship are linked to it. Fasting is not achieved without the sighting of the crescent moon of Ramadan, and it does not end without the sighting of the crescent moon of Shawwal. Similarly, the rituals of Hajj are linked to the sighting of the crescent moon of Dhul-Hijjah, and other acts of worship begin and end based on the sighting of the crescent moon. From here, the importance of studying the effect of astronomical calculations on the sighting of the crescent moon and proving the beginnings and ends of the lunar months becomes apparent.

The Shiites rely primarily on visual sighting to prove the crescent moon. Is it possible to rely on astronomical calculations, or to combine visual sighting and astronomical calculations? This is what this research has been explained through the following topics.

Keywords: Problematic - Calculation - Astronomical - Month - Lunar

Introduction:

The sighting of the crescent moon of the lunar month is of great importance to the validity of many acts of worship in Islamic law. The basis for determining the validity of the month in Islamic law is the sighting of the crescent moon. This confirms the validity of the lunar month, upon which the obligatory rulings are based. These rituals must be performed on time in order for them to be completely valid. Otherwise, they are invalid because they are performed outside their proper time.

Research Problem:

With the beginning of the holy month of Ramadan, the issue of determining the crescent moon for the holy month of Ramadan emerges on the Islamic scene. This dispute is not a contemporary one, but rather has roots dating back to the era of the Followers and continues to the present day. It is well known that the sighting of the crescent moon marks the beginning of the lunar month, to which many acts of worship pertaining to the legally obligated are linked in Islamic law. Hence, the importance of studying the effect of astronomical calculations on the sighting of the crescent moon and determining the beginnings and ends of lunar months becomes apparent. Shiites primarily rely on visual sighting to determine the crescent moon.

Is it possible to rely on astronomical calculations, or to combine visual sighting with astronomical calculations? From this perspective, we attempt in this research to address the problem of determining the crescent moon by using astronomical calculations.

Research Questions: The researcher attempts to answer the following questions:

- What is meant by astronomical calculations?
- What are the means of legally establishing the crescent moon?
- What is the importance of astronomical calculations in determining the lunar months?

Research Objectives: The study aims to achieve the following objectives:

- Demonstrate the importance of determining the lunar months in performing worship in Islamic law.
- Demonstrate the importance of astronomical calculations in determining the lunar months.
- Address the problem of using astronomical calculations to determine the lunar months.

Importance of the topic:

Seeing the crescent moon is considered a scientific matter of importance in Islamic law, as many of the rulings of worship are linked to it. Fasting, as the crescent moon is not established, is a scientific matter of importance in Islamic law, as many of the rulings of worship are linked to it. Fasting is not established except by the sighting of the crescent moon of Ramadan, and it does not end until the sighting of the crescent moon of Shawwal. Similarly, the Hajj rituals are linked to the sighting of the crescent moon of Dhu al-Hijjah, and other acts of worship begin and end based on the sighting of the crescent moon. Hence, the importance of studying the effect of astronomical calculations on the sighting of the crescent moon and establishing the beginnings and ends of lunar months becomes apparent. Shiites rely primarily on visual sighting to establish the crescent moon. Is it possible to rely on astronomical calculations, or to combine visual sighting with astronomical calculations? This is what this research paper discusses.

Research Methodology

The researcher attempted to use the descriptive-inductive approach to describe the problem under study, followed by the scientific approach, which involved collecting and critiquing scholarly material, and then arriving at conclusions derived from the premises. The researcher also sought to document the texts from their approved sources.

²⁶
Study plan: The plan includes an introduction, two chapters, and a conclusion.

Chapter One: The Relationship of Astronomical Calculations to the Performance of Worship and Transactions in Islamic Law

Chapter One: The Impact of Astronomical Calculations on the Performance of Worship and Transactions:

²⁸
Lunar months play a significant role in fulfilling worship in Islamic law. The Holy Qur'an mentions the importance of sighting the crescent moon and its impact on establishing legal rulings. God Almighty says:

﴿يَسْأَلُونَكَ عَنِ الْأَهِلَّةِ قُلْ هِيَ مَوَاقِيتُ لِلنَّاسِ وَالْحَجِّ وَلَيْسَ الْبِرُّ بِأَنْ تَأْتُوا الْبُيُوتَ مِنْ ظُهُورِهَا وَلَكِنَّ الْبِرَّ مَنِ اتَّقَى وَأْتُوا الْبُيُوتَ مِنْ أَبْوَابِهَا وَاتَّقُوا اللَّهَ لَعَلَّكُمْ تُفْلِحُونَ﴾ [Al-Baqarah: 189]

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This is what was confirmed by the Sunnah of the Messenger of Allah (peace and blessings of Allah be upon him), as narrated by the authors of the Sahih and Sunan on the authority of Abu Hurayrah, who said: The Prophet (peace and blessings of Allah be upon him) said: "Do not anticipate the month by one or two days, unless that coincides with a fast that one of you is observing. Fast when you see it, and break your fast when you see it. If it is obscured from you, then count thirty days and then break your fast." [At-Tirmidhi: 648; Al-Bayhaqi: 4/204-205; Al-Bukhari: 1900; Muslim: 20]. There is a report on this topic from some of the Companions of the Prophet (peace and blessings of Allah be upon him). Abu 'Eesa said: The hadith of Abu Hurayrah is a hasan saheeh hadith, and the scholars acted upon this. They disliked a man rushing to fast before the start of Ramadan because of the meaning of Ramadan. But if a man is observing a fast and it coincides with that, there is nothing wrong with it according to them. [At-Tirmidhi: 648]

Al-Nawawi says: "In one narration, estimate it as thirty. In another narration, if you see the crescent, then fast. If you see it, then break your fast. If it is hidden from you, estimate it. In another narration, if it is hidden from you, then fast thirty days. In another narration, if it is hidden from you, then complete the number. In another narration, if the month is hidden from you, then count thirty. In another narration, if

it is hidden from you, then count thirty. All of these narrations are in the book in this order.” [Al-Nawawi: 7\189]

The Second Requirement: Acts of Worship That Depend on the Proof of the Crescent in Their Performance: The Wise Lawgiver²⁴ has made clear that the rulings on acts of worship connected to the months are based on the lunar months, and God has made the timings of the lunar months connected to the crescents. God Almighty says: {They ask you, [O Muhammad], about the new moons. Say, "They are measurements of time for the people and for Hajj."} [Al-Baqarah: 189], and on the authority of Abdullah ibn Umar (may God be pleased with them both) that the Prophet (peace and blessings of God be upon him and his family) said: “God has made the new moons measurements of time.” Narrated by the two imams: Ibn Khuzaymah in his “Sahih” and al-Hakim in “Al-Mustadrak,” and he authenticated it [Ibn Khuzaymah: , al-Hakim:], al-Razi said: “The detailed explanation of this is that determining time by months has benefits, some of which are connected to religion and some of which are connected to this world. As for what Among these are those related to religion, many of which relate to fasting. The second is Hajj. The third is the waiting period for a woman whose husband has died. The fourth is vows related to specific times and the virtues of fasting on days that are known only by the new moon. As for those related to worldly matters, they include debts, rents, appointments, pregnancy and breastfeeding periods, and others. All of these are matters whose timing cannot be easily determined except when there is a difference in the shape of the moon. [Al-Razi: 5\284]

From this text, we can derive the most important acts of worship and transactions related to the sighting of the crescent moon, and part of their validity is the occurrence of the new moon. These include:

First: Fasting the month of Ramadan and completing its waiting period.

Second: Performing the rituals of Hajj and Umrah.

Third: Paying zakat on wealth and zakat on trade.

Fourth: The waiting period of a woman whose husband has died.

Fifth: The waiting period of a woman who has gone through menopause.

Sixth: Chapters on various types of transactions.

Section Two: The Problem of Using Astronomical Calculations to Determine the Lunar Months

First Section: Methods of Confirming the Crescent of the Lunar Month ,It is established in Islamic law that the crescent of the lunar month is confirmed by one of three methods specified by the Prophetic Sunnah, as stated in the hadith under discussion: “Fast upon its sighting, and break your fast upon its sighting. If it is obscured, count thirty days and then break your fast.” [Al-Tirmidhi: 648]

The first method: Sighting the crescent with the naked eye, with the testimony of a just person when confirming the crescent of Ramadan, and two just people when confirming the crescent of Shawwal. Sighting the crescent is considered the legal basis upon which to confirm the crescent, as the Sunnah clearly states, and the Qur’anic text states:

﴿شَهْرُ رَمَضَانَ الَّذِي أُنْزِلَ فِيهِ الْقُرْآنُ هُدًى لِلنَّاسِ وَبَيِّنَاتٍ مِنَ الْهُدَى وَالْفُرْقَانِ فَمَنْ شَهِدَ مِنْكُمُ الشَّهْرَ فَلْيَصُمْهُ﴾ [Al-Baqarah: 185]

It was stated in the book Mafatih al-Ghaib: “Know that there is a problem in this verse, which is that the Almighty’s saying: ‘So whoever among you witnesses the month, let him fast it’ is a sentence composed of a condition and a reward. The condition is witnessing the month, and the reward is the command to fast. If the condition is not fully met, no reward is due. The month is the name for the specific time from its beginning to its end. Witnessing the month only occurs at the last part of the month. The apparent meaning of this verse requires that when witnessing the last part of the month, he must fast the entire month. This is impossible, because it leads to performing the action in the past time, which is impossible. Therefore, from this evidence we know that this verse cannot be taken at its apparent meaning, and that it must be diverted to interpretation. The way to do this is to carry the word ‘month’ to a part of the month in terms of the condition, so its statement becomes: ‘Whoever witnesses a part of the month, let him fast the entire month.’ Based on this: Whoever witnesses the crescent of Ramadan has witnessed a part of the month, and the condition has been fulfilled, so the reward is due to him, which is the command to fast the entire month. Based on this interpretation, the meaning of the verse is correct, and there is nothing in it except carrying the word ‘whole’ to the part, which is...” A famous metaphor.” [Al-Razi: 5\255]

The number by which ³the sighting of the Ramadan ²²crescent moon is proven:

First: The jurists agreed on two conditions for those who report the sighting of the crescent moon:

The first condition: That the person be of legal age. The report of a minor or an insane person is not accepted, as their statements are not trustworthy.

The second condition: That the person be just. The report of an immoral person or someone with a hidden background regarding the sighting of the crescent moon is not accepted, as is the hadith of Al-Harith ibn Hatib (may Allah be pleased with him): "The Messenger of Allah (peace and blessings be upon him) commanded us to perform the ritual sacrifice based on the sighting. If we do not see it, and two just witnesses testify, we perform the ritual sacrifice based on their testimony." [Abu Dawud: 2338] Maleness and freedom are not required for the sighting of the crescent moon. The report of a female or a slave is accepted. For the general public, and because the principle is equality between men and women, and between free people and slaves, except for evidence. [Al-Aidan: 1\536]

Second: They differed regarding the number of times the crescent moon is sighted.

The first opinion: A specific number is not required, and it is confirmed by the sighting of one just person. This is the opinion of the majority of jurists (Hanafis, Shafi'is, and Hanbalis). They hold that the month of Ramadan is confirmed by the sighting of one just person. [Al-Kasani: 2\80, Al-Nawawi: 74, Ibn Qudamah: 2\108]

The Hanafis restricted the validity of the sighting of one just person to the sky being unstable, such as clouds or dust. However, if there is no such thing as a clear sky, then the sighting is confirmed only by the testimony of a group of people whose testimony is used to determine the crescent moon. The rationale for al-Hasan's narration - may God have mercy on him - is that this is a case of reporting, not testimony. This is evidenced by the fact that the testimony of a single person is accepted if there is a reason for the sky. If it were testimony, it would not be accepted, because a number is a condition for testimonies. If it is a case of reporting, not testimony, then a number is not a condition for reporting on religious matters. Only justice is required, as in the narration of reporting on the purity and impurity of water and the like. [Al-Kasani: 2\80]

Those who say that the month is established by the sighting of a just person cite as evidence the hadith of Abdullah ibn Umar - may God be pleased with them both - who said: "The people saw the crescent moon, so I informed the Prophet (peace and blessings be upon him) that I had seen it, so he fasted and commanded the people to fast" [Abu Dawud: 2338].

They also cite as evidence ³ what was narrated on the authority of Ibn Abbas - may God be pleased with him - "A man came to the Messenger of God (peace and blessings be upon him) and said: 'I have seen the crescent moon.' He said: 'Do you bear witness that there is no god but God and that Muhammad is the Messenger of God?' He said: 'Yes.' He said: 'Get up, Bilal, and call the people to fast tomorrow.'" ⁷ Thus, the Messenger of God (peace and blessings be upon him) ¹⁸ accepted the testimony of a single person regarding the crescent moon. Ramadan and we have in the Messenger of Allah, peace and blessings be upon him, a good example. Because this is not testimony, but rather information, as evidenced by the fact that its ruling is binding on the witness, which is fasting, and the ruling of testimony is not binding on the witness. A person is not accused of imposing something upon himself, so this indicates that it is not testimony, but rather information. The number is not a condition in information, except that it is information in the matter of religion, so Islam, reason, and puberty are conditions for it [Al-Kasani: 2\81]

The second opinion: The number is required, and the minimum number is two. This is the opinion of the Malikis, and ⁵ it is a statement of the Shafi'is and Abu Yusuf of the Hanafis. They held that the month of Ramadan is not established except by the sighting of two just men. So whoever is informed by two just men of the sighting of the crescent, or hears them informing someone else, is obligated to fast, not by a just man, nor by him and a woman, nor by him and two women, according to the well-known opinion in all of them. That is, it is not obligatory for whoever heard the just man or he and a woman to fast. As for the one who saw it, it is absolutely obligatory for him [al-Dardir: 1\509, al-Kasani: 2\80, al-Ansari: 1\409, al-Muhalla: 2\63]. They cited as evidence the hadith of al-Hasayn ibn al-Harith al-Jadali, who said: The Emir of Mecca - al-Harith ibn Hatib - said: The Messenger of God, may God bless him and grant him peace, commanded us to perform the ritual based on the sighting. If we do not see it and two just witnesses testify, we perform the ritual based on their testimony [al-Daraqutni: 146]. Reporting the sighting of the Ramadan crescent moon is uncertain, as it is either a narration or a testimony. Those who consider it a narration, the Hanafis and Hanbalis, and a Shafi'i opinion, accept the woman's testimony. Those who consider it a testimony, the Malikis, and the more correct opinion according to the Shafi'is, do not accept the woman's testimony. [Kuwaiti Encyclopedia: 23\141]

If the sky is clear and people see the crescent, they should fast. If only one person testifies to the sighting of the crescent, his testimony is not accepted unless a group testifies. The judge is informed by their testimony, according to the apparent

narration. He did not estimate this. It was narrated from Abu Yusuf that he estimated the number of the congregation to be fifty men, and from Khalaf ibn Ayyub that he said: Five hundred, in Balkh, a small town. Some of them said: There should be one or two congregations from each mosque. Al-Hasan narrated from Abu Hanifah (may Allah have mercy on them both) that the testimony of one just person is acceptable, which is one of the two opinions of al-Shafi'i (may Allah have mercy on him). Another opinion said: The testimony of two people is acceptable. [al-Kasani: 2\80]

The second method: completing the number of Sha'ban to thirty nights. This occurs when it is impossible to see the crescent of Ramadan on the twenty-ninth day of Sha'ban. If it is cloudy, then it is known that Sha'ban is complete to thirty days. [Al-Kasani: 2\80] If it is not possible to see the crescent, then it is obligatory to complete the number of Sha'ban to thirty days. This is the opinion of the majority - the Hanafis, Malikis, Shafi'is and a narration in the Hanbali school - and they based their evidence on the hadith of Ibn Abbas - may Allah be pleased with him - that the Prophet - may Allah bless him and grant him peace - said: "Fast when you see it, and break your fast when you see it. If a cloud comes between you and it, then complete the number and do not start the month with a new moon." Nafi' said: When twenty-nine days of Sha'ban had passed, Abdullah ibn Umar would send someone to look for the crescent. If he saw it, then that is good. If he did not see it and no clouds or mist prevented him from seeing it, then he would be breaking his fast. If a cloud or mist prevented him from seeing it, then he would be fasting. [Ibn Qudamah: 2\108]

The third method: Estimating the crescent moon in the event that it is not possible to know the lunar phases and not be able to see it. On the authority of Ibn Umar, who said: The Messenger of Allah, peace and blessings be upon him, said: "The month is only twenty-nine days, so do not fast until you see the crescent moon. And do not break your fast until you see it. And if it is obscured from you, then estimate it." [Muslim: 236] The meaning of "estimate it" is to narrow down the number, and narrowing it down means making Sha'ban twenty-nine days. [Ibn Qudamah: 2\108], and in another narration, which is the doctrine of the Hanbalis, if the sky is clear and the crescent is not sighted on the night of the thirtieth, the number of days of Sha'ban is completed as thirty days. If the sky is cloudy or hazy and the crescent is not sighted, Sha'ban is estimated to be twenty-nine days, and the thirtieth (the day of doubt) is fasted as a precaution with the intention of Ramadan. They cited as evidence the hadith of Ibn 'Umar (may Allah be pleased with him) who said: I heard the Messenger of Allah (peace and blessings of Allah be upon him) say: "When you see it, then fast, and when you see it, then break your fast. If it is cloudy, then

estimate it." [Bukhari: 1909, Muslim: 1018] They interpreted the phrase "estimate it" as meaning to make it shorter, which means making Sha'ban twenty-nine days. The majority of jurists do not consider calculations in establishing the month of Ramadan, based on the fact that we only worship Allah by sighting it. Some Shafi'is disagreed on this. [Al-Mawsu'ah Al-Kuwaitiyyah: 23\142]

The Second Requirement: Proving the Crescent Through Astronomical Calculations:

The jurists did not agree on considering astronomical calculations as a definitive means of proving the crescent and the beginning of the lunar month. Many jurists explicitly stated that it is a means of familiarization, not a means of certainty. Those who addressed this issue were the scholars of the Tabi'un and those who followed their approach. They cited the Prophet's statement, "Estimate it," meaning, infer it from its phases, and estimate the completion of the month based on its calculations [Al-Qurtubi: 2\293]. It was also reported that the Tabi'un jurist, Mutraf ibn al-Shakheer, said: "If the crescent is hidden, it is reverted to calculations based on the paths of the moon and the sun" [Ibn Rushd: 1\228]. Among the early scholars who held this view was Al-Hafiz Al-Bad Al-Ghaini Al-Hanafi in Umdat Al-Qari', who reported that it was the doctrine of Ibn Qutaybah Al-Dinawari [Al-Qari': 10\387]. Imam Al-Qarafi narrated in Al-Furuq two opinions on this issue from the Maliki school of thought: "There are two opinions in the Maliki school of thought regarding establishing the new moon by calculations" [Al-Qarafi: 2\178]. This is also one of the opinions in the Shafi'i school of thought. They said this regarding a man who knows by calculations that tomorrow is Ramadan, then he should fast, because he knew the month based on evidence and a reason that gave him a preponderance of belief. It is similar to evidence if a trustworthy person informs him of the new moon sighting. This is what a group of Shafi'i imams, the proponents of the correct view, said: Imam Abu al-Abbas ibn Surayj al-Baghdadi [d. 306 AH], Imam Abu Bakr al-Qaffal al-Shashi [d. 365 AH], and Judge Abu al-Tayyib al-Tabari [d. 450 AH]. [Al-Nawawi: 6\289]

The learned imam and chief judge Taqi al-Din al-Subki stated that if testimony of sighting contradicts definitive calculations, it is rejected and the calculations are considered [Al-Subki: 1\209].

Al-Hafiz Ibn Daqiq al-Eid also said the same thing: "What I say is that calculations cannot be relied upon in fasting, because the moon is separated from the sun, as astrologers see, with the month preceding the month by calculations by one or two

days. This is an innovation for a reason that God Almighty has not legislated. However, if calculations indicate that the crescent has risen from the horizon in a way that could be seen were it not for the presence of an obstacle—such as clouds, for example—this necessitates it being obligatory, due to the presence of the legal reason, and not..." The reality of the sighting is a necessary condition, because it is agreed that if a person confined in a dungeon knows that the waiting period has been completed, or through diligence based on signs that the day is Ramadan, he must fast, even if he does not see the crescent, nor does anyone who saw it inform him. [Al-Eid: 2\8]

Among the contemporary scholars who have stated that it is permissible to use astronomical calculations are the scholar of the Levant, Sheikh Jamal al-Din al-Qasimi, Sheikh Rashid Rida, the Grand Mufti of Egypt, Sheikh Muhammad Bakhit al-Muti'i, Sheikh Mustafa al-Maraghi, Sheikh Mustafa al-Zarqa, Dr. Yusuf al-Qaradawi, and others. [Rida: 2\151, al-Muti'i: 256]

³² The scholar Sheikh Mustafa al-Zarqa says in his research, "Why the disagreement over astronomical calculations?" The following: "The command to rely on the sighting of the crescent is not because seeing it is in itself an act of worship, or that it contains the meaning of devotion, but rather because it is the possible and accessible means at that time to know the beginning and end of the lunar month for those who are thus illiterate, i.e., illiterate and have no knowledge of writing or astronomical calculations. This implication of the meaning of the legal text itself is that the Messenger, may God bless him and his family, And if Salam and his Arab people at that time had been people of knowledge of the Book and arithmetic, such that they could observe the astronomical bodies and control, by the Book and arithmetic, their regular cycles, which were organized by the power of God, the All-Knowing, the All-Powerful, in a way that is not disturbed or different, so that they would know in advance by calculation when the new crescent would appear, so that the previous month would end and the next would begin, they would have been able to rely on astronomical calculations, and so would everyone who has this knowledge of accuracy and discipline to the degree that it is trusted and assured of its correctness. This then - without a doubt - is more reliable and accurate in proving the crescent than relying on two witnesses who are not infallible from illusion and visual deception, nor from lying for a hidden personal purpose or interest, no matter how much we investigate to verify their apparent justice that suggests their truthfulness. Likewise, it - that is, the method of astronomical calculations - is more reliable and accurate than relying on a single witness when the weather is not clear

and vision is difficult, as some of the respected schools of thought say in this case.
[Al-Zarqa: 199]

Conclusion and Key Findings:

- Knowing the beginnings of lunar months is of great importance for the implementation of acts of worship and transactions in Islamic law, as stipulated in the Holy Qur'an.
- All months are suitable for all acts of worship and transactions, and astronomical calculations play a fundamental role in determining the crescent moon and the beginning or end of the month.
- It is established in Islamic law that determining the crescent moon of a lunar month is achieved by one of three methods specified by the Prophetic⁴ Sunnah: visual sighting, the completion of a month of thirty days, or calculating the crescent moon.
- The first method: Sighting the crescent moon with the naked eye, with the testimony of a just witness when determining the crescent moon of Ramadan, and two just witnesses when determining the crescent moon of Shawwal.
- Jurists differed regarding the number of witnesses required to confirm the sighting. The majority limited the number of witnesses to one witness only in confirmation, and to two witnesses in denial.
- The second method: completing the Sha'ban month with thirty nights; this occurs when the Ramadan crescent cannot be sighted on the twenty-ninth day of Sha'ban.
- The third method: estimating the crescent; this occurs when the lunar phases cannot be determined and the crescent cannot be sighted.
- Many jurists have stated that this is a means of familiarization, not a means of certainty.

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