



*In The Name of Allah, the Beneficent, the Merciful
With Prayers and Peace upon the Prophet Muḥammad, His Family and Companions*

CESAREAN MOON BIRTHS

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Part II

The Scholars who Permitted Calculation

Only five major scholars are known to have allowed calculating as a means to determine the lunar month. However, if one examines what they said objectively, one cannot conclude from their words that they accepted the permissibility of using calculation in lieu of the physical sighting. On the contrary, what they understood was that in the case of an obscured horizon, one could resort to calculation for the thirtieth day. Thus, they maintained that the Prophet ﷺ made obscurity a condition for calculation, and without the condition being fulfilled it was prohibited. It is important to examine the men and study their words, while keeping in mind that this opinion was rejected by the five imams and their schools with the exception of a handful of scholars, whose opinions we shall also examine.

Three of these five scholars were from among the first three generations of Islam, the people whom the Prophet ﷺ referred to as the virtuous ones. The first and greatest was Muṭarrif b. ‘Abd Allāh, who was known as Ibn al-Shikhīr. What he actually said is, “If the *hilāl* is obscured [on the thirtieth day at sunset], then it can be reckoned with the mansions of the moon, i.e., which mansion it was in when it was obscured, or by way of calculation (*ḥisāb*).”¹ It is clear by his use of a conditional sentence “if/then,” that he was not advocating calculation as a method in which we bypass sighting altogether. Rather, he was of the opinion that if after completing twenty-nine days of the previous month the sky was obscured by clouds or other atmospheric conditions, then it was permissible but not obligatory to resort to working out the new moon’s birth, either through using the lunar mansions or some form of computation. The reason for his conclusion is the structure of the Arabic in the hadith that he derived his ruling from. When the Prophet ﷺ said, “And if it is obscured, then (*fa*) calculate it,” he used a conditional sentence, i.e., *if this happens, then do this. No one in the history of Islam, until now, has ever interpreted this hadith to mean that one could merely resort to calculation and abandon the clear skies of the thirtieth night.* In other words, just as the operative cause (*‘illah*) for the obligation of fasting Ramadan in the first place is the physical appearance of the crescent, similarly the

¹ al-Musū‘at al-Fiqhiyyah, *Wizārat al-awqāf wa shu‘ūn al-Islāmiyyah* (Kuwait: ,1992), 22:12.

operative cause for resorting to calculation is actually the obscurity of the horizon; and the principle that scholars demand for suspending rulings is that “rulings are contingent upon their operative causes in both their application and suspension” (*al-ahkām tunāṭu bi ‘ilaliha aw asbābiha wa tadūru ma‘ahā wujūdān wa ‘adaman*). According to our constitutional jurists, the “if/then” structure designates a rationale behind the ruling. *So, even for those few scholars who permitted calculation, they recognized that the Prophet ﷺ had place obscurity as an operative cause. If there was no obscurity, the ruling could not be applied, for the condition permitting it did not exist.*²

One of Islam’s greatest jurists, Ibn Rushd, the Grandfather, clarified this last crucial and definitive point concerning this entire issue in the *Muqaddimāt*. If understood, there is no further discussion. He wrote:

*By consensus (ijmā‘) of the scholars, it is not permitted for anyone who is determining either [to begin] fasting or to break the fast [of Ramadan] to do so by relying on calculation and relinquishing physical sighting. The only difference [of opinion] among the experts in this area is in regards to when the new moon is obscured by atmospheric conditions. Then, the question arises, “Can one use his knowledge of calculation or not?” Muṭarrif b. al-Shikhīr said, “He can do so privately.” This is also the opinion of Imam al-Shāfi‘ī [cited by Ibn Surayj], but what is well-known from his school is the position of the majority, which is that he cannot do so.*³

Clearly, Muṭarrif was not advocating a sole reliance on calculation; he permitted it only if the crescent was obscured, since the scholars are in complete agreement that it is prohibited to rely on calculation in lieu of physical sighting. Their difference about calculation is perfectly stated by Ibn Rushd in the above remarks. Furthermore, another problem in relying on Muṭarrif as an authority to substantiate the position is that the actual narration from Muṭarrif was considered by the Spanish polymath, most noted for his knowledge of hadith and their chains, Ibn ‘Abd al-Barr to be doubtful: “This narration has no sound basis to definitively attribute it to Muṭarrif.”⁴

The second person among the first three generations known to have argued for using calculation *if the new moon is not visible* is Imam Ibn Surayj, and, as a student of Imam al-Shāfi‘ī, there is no doubt that he is an imam of stature. However, he too is often cited as a proof for using calculation without thorough explanation of his actual position being provided. Like Muṭarrif b. al-Shikhīr, Ibn Surayj did not say that Imam al-Shāfi‘ī said using calculation was absolute; he also followed the hadith’s stipulation that the new moon be obscured; only in that case did he allow it. Ibn Surayj’s own attempt at reconciling the two hadith—i.e. the one which says, “complete thirty days,” and the one which says, “If the crescent is obscured, then calculate it”—led him to conclude that they were intended for two different groups. As for the hadith that ends with, “if it is obscured, then calculate it,” Ibn Surayj believed it was directed to the expert in mathematics or astronomy, who is able to do so, and only him. As for the second narration, Ibn Surayj maintained it was

² ‘Ali Ḥasab Allāh, *Uṣūl al-Tashrī‘ī* (Egypt: Dār al-M‘ārif, 1971), 145-149.

³ al-Hāj Muḥammad b. ‘Abd al-Wahāb al-Fāsi, *al-‘Azab al-zillāl fi mabāḥiṭh ru’ayāt al-hilāl* (Casablanca: Sharikāt al-Nashr, n.d.), 2:244.

⁴ Ibn Ḥajr al-‘Asqalānī, *Fathḥ al-Bārī* (Beirut: Dār Iḥya’ al-Turāth al-‘Arabī, 1988), 5:97.

meant for those who did not have the requisite expertise to calculate. In that case, they were to complete thirty days.

This reconciliation of the differing narrations, however, was completely and utterly rejected by Qadi Abū Bakr, who maintained that the Prophet ﷺ would never provide two different codes for people. He wrote two long pages attacking the position that many scholars have since commented on; this indicates the degree to which his emotions were aroused by the conclusion of a scholar as illustrious as Ibn Surayj. A portion of what Qadi Abū Bakr wrote follows:

The hadith, “Fast when the crescent is sighted and break the fast when it is sighted,” is explicitly unambiguous and a decisive text (*naṣṣ*) clearly meaning that one cannot bypass sighting the moon in either fasting or ending the fast. The reason is that [sighting] is the criterion given for the obligation and its determined length.... The Prophet ﷺ is telling us to bind your worship to physical sighting—to make your worship connected in its outset and its end with the appearance of the crescent.... Concerning the end of the hadith, “if the crescent is obscured,” I have seen some of the Shāfi‘ī scholars claim that to determine its birth, one can have recourse to the calculations of the astronomers.... This is a mistake that cannot be fixed, a slip from which there is no recovery, a distancing from which no nearness can come after, a humiliation that cannot find redemption. O Ibn Surayj! Where is your famous *Suraijiyyah*?⁵ You follow this narrow rough path off the road. Tell me, what does Muḥammad ﷺ have anything to do with stars?⁶

The noble imam, who was also a proficient astronomer and considered it to be a sound science, goes on for another page, but the above suffices to illustrate his antipathy toward the very idea of calculating the crescent moon’s birth.

Finally, the only other major scholar that is quoted from among the first three generations about the permissibility of calculation should the new moon be obscured is Ibn Quṭaybah. Ibn Ḥajar said in his commentary on al-Bukhārī’s hadith collection, “Ibn Quṭaybah is not someone to rely upon in such matters,”⁷ meaning that since he was a scholar of hadith and not a jurist, his opinion on the matter is negligible.

Ibn Ḥajar goes on to explain that there were three interpretations of the hadith that ends, “if it [the Ramadan crescent] is obscured, then calculate it”:

The first was the vast majority’s opinion, which was that it meant to complete thirty days. The second was that it meant *consider the new moon ipso facto present behind the clouds* [irrespective of calculation], and fast as a precaution; this was the school of Ibn ‘Umar, and Aḥmad inclined toward that position. They also opined that should it prove to have been from Sha‘bān, then one must fast thirty-one days for Ramadan. Finally, “They said it meant calculate it based upon the mansions of the moon, i.e., what

⁵ Ibn Surayj is famous in the Shāfi‘ī school for solving an abstruse problem in a divorce situation, and this is what the imam is referring to.

⁶ Qadi Abū Bakr b. al-‘Arabī, *‘Āridat al-ahwadhī bi Sharḥ Ṣaḥīḥ al-Tirmidhī* (Cairo: Dār Umm al-Qurā, n.d.), 3-4:205-9.

⁷ Ibn Ḥajar al-‘Asqalānī, *Fathḥ al-Bārī* (Beirut: Dār Iḥyā’ al-Turāth al-‘Arabī, 1988), 4:96.

stars the moon had been in throughout the month and which were on the horizon at the time.”⁸

As can be clearly seen, again the permissibility for calculation is only if the crescent is obscured. Despite that, all of the scholars who commented on the few that supported such a position clearly reject it. What then would they have said about bypassing the sighting all together, without the stipulation that the crescent be obscured?

Among the later scholars who have been quoted in support of calculation is the majestic and agreed upon Imam al-Subkī. He is, without question, an authority in *uṣūl*. Moreover, his opinion is highly regarded within and without his own Shafī‘ī school. If one looks at what he actually said, one finds the same reasoning as all of the other scholars on this issue. Unfortunately, however, the point he makes is obfuscated by those today who are advocating abandoning the Sunnah of sighting the crescent and replacing with the “Sunnah” of calculating it. Here is Imam al-Subkī’s actual position:

The Muslims are in consensus, as far as I know, that there is no legal consideration for the opinion of the astronomer that [the month begins] with the separation of the moon from the sun at conjunction if visibility is not possible due to the nearness of the crescent to the sun’s [alignment], irrespective of whether this is before, after, or at the time of sunset. *What scholars have disagreed upon is the situation when the angle of elongation is such that visibility is possible and can be ascertained by calculation but there were clouds that came between us and the crescent; [then, in that case, is it permissible then to use calculation].*⁹

This is the crux of the issue. If some feel, for whatever reasons, that they must break ranks with the five great imams and their schools, then at least let those who wish to calculate follow this minority yet existent opinion of a few of our great imams. People may determine the new moon visibility factor, and if astronomers say that it cannot be sighted, then they can reject the testimony of any who claim to have seen it; in fact, this is the position of many of our scholars of the past. On the thirtieth night, after completing twenty-nine days of Sha‘bān, if no one can see the moon anywhere on the earth, let them announce that since the astronomers have said visibility would have been possible had the atmospheric conditions not obscured our view, people can, based upon this weak opinion of a sound hadith, decide that they will fast tomorrow. However, there is no other sound position which involves calculation, and to bypass sighting altogether is to bypass an operative cause that God has placed upon humanity and cannot be suspended without permission from the Prophet ﷺ.

The last major scholar of the past who is cited as a proof for calculation is Ibn Daqīq al-‘Īd. He too is an imam without argument. However, upon examining his position, one also finds he has the same reasoning as the others, and again it is either ignored or missed by those promoting calculation. In his commentary on *‘Umdah al-Aḥkām*, Ibn Daqīq al-‘Īd explains his stance:

My position is as follows: calculation is not permissible for fasting by determining the separation point of the conjunction of the sun and moon

⁸ Ibid.

⁹ al-Hāj Muḥammad b. ‘Abd al-Wahāb al-Fāsī, *al-‘Azab al-zillāl fī mabāḥith ru’ayāt al-hilāl* (Casablanca: Sharikāt al-nashr, n.d.), 1:20. (Note: emphasis mine.)

based upon the position of the astronomers who see the start of the new month as something that precedes the actual sighting [of the crescent] by a day or two. That is in fact innovating a legal cause (*sabab*)¹⁰ that God has not legislated. *But should the ability to calculate determine that the visibility curve of the crescent is such that it would be seen had not something preventing its visibility caused that, such as clouds, then, in such a case, the obligation to fast is necessary because the legal cause for the fast is there.* The reason for this is that the actual physical sighting is not what is legally binding, given that it is agreed upon that if someone was confined in a cell and knew by calculation that the [month] had run its course or by attempting to understand the signs that the day was indeed from Ramadan, then it would be incumbent upon him to fast, even if he did not see the crescent and no one informed him that it had been seen.¹¹

Sadly, in the papers I examined that used this quote to support calculation, the first half of his quote was omitted, so that his actual position was entirely misrepresented. One paper stated that the imam did not consider sighting to be a condition, when what he is saying is that *physical sighting is not legally binding in the case of one who cannot see the moon*, which is why he uses as an example the man in the cell who has no access to sighting the moon nor to news of anyone who did! In such circumstances, the imam says one can resort to calculating or *ijtihād*! Upon reading truncated versions of the quote, one could perhaps conclude that the imam did not see visibility as a stipulatory legal cause (*sabab*) before the thirtieth day. But in light of the entire quote, he clearly does, and would have had to because it is agreed upon and a clearly discernable fact in the Qur'anic verses and the hadith associated with the issue. In fact, while they are often used interchangeably, a legal cause (*sabab*) is more general than a *ratio legis* (*illah*). *Imam Ibn-Daḳīq al-Īd clearly argues here that to use calculation in lieu of sighting is bypassing a legal cause (sabab) that was legislated by God Himself!*

Another argument for calculation posited is that since we determine our prayer times using mathematics and predetermined schedules with great precision, why can't we calculate our months? While this point may appear sound, it is actually a false analogy because of the existence of a point of divergence (*qiyāsun ma'a wujūdi fāriq*). In the case of

¹⁰ There are in *uṣūl* stipulatory rulings that entail something being made a legal reason (*sabab*), a condition (*shart*), or a preventative (*māni'*) for something else. A legal reason (*sabab*) is that which when present necessitates a ruling, and when absent prevents it. In the case of sighting the new moon for fasting, it is considered a *sabab*, because the Prophet ﷺ said, "Do not fast unless you see the crescent, and do not break the fast unless you see it." What Ibn Daḳīq is arguing is that if crescent visibility can be shown through calculation, which it can, and something prevents you from seeing it, such as clouds, then you can use calculation to determine the start of Ramadan. While this is a minority opinion, it is nonetheless a valid *ijtihād*. It does not, however, conform to the accepted positions of any of the four schools of thought, all of which stipulate the completion of thirty days from Sha'bān, which is the soundest position and in accordance with the clear guidance of the Prophet ﷺ. And God knows best.

¹¹ Aḥmad Muḥammad Shākir, *Awā'il al-shahr al-ʿArabiyyah* (Cairo: Maktabah Ibn Taymiyyah, 1987), 10.

prayer times, the stipulatory cause (*sabab*) by which the prayer time is known is the movement of the sun. Imam al-Qarāfi devoted an entire section explaining this principle in his magisterial work, *The Divergences (al-Furūq)*. In it, he states the following:

Why is it that we can determine prayer times by calculation and the use of instruments, yet in the case of crescent moons for the determination of our Ramadans, it is not permissible to use [instruments and calculation] according to the accepted position? The difference is that God has stipulated in our devotional practice [of fasting] the sighting of the crescent moon and if that is not possible then the completion of thirty days of Sha‘bān, and He did not stipulate the astronomical new moon. On the other hand, in the case of prayer times, He stipulated simply the entrance of the times and their self-determining times. Hence, we are able to determine them by any means possible. For instance, a prayer is conditional upon the occurrence of the sun’s postmeridian phase. [With Ramadan] however, it was not linked with the conjunction’s separation but with its physical sighting. And should the crescent be obscured, we complete thirty days.¹²

Imam al-Qarāfi was a scholar of astronomy and actually believed astronomy was decisive (*qat‘i*) in proof, which is why he allowed calculating prayer times unlike many other Mālikī scholars who did not.¹³ He does, however, state conclusively that the sighting is a stipulation placed upon the community by God. In other words, the argument that it was only due to the innumeracy of the early community that people were told to determine the month by sighting and if, in the future, the innumeracy was removed they could resort to calculation and bypass an attempt to sight the moon physically is an entirely modern innovation. It is clear that the imams are in agreement about the proofs that exist. Their differences occur only in relation to an obscured crescent moon that cannot be seen due to atmospheric conditions. In such cases, the position of calculation is still extremely weak, but, undeniably, it was, indeed, upheld by some great scholars.

In rejecting calculation, our scholars were not denying the validity of astronomy. They understood that it was a decisive and exact science at predicting the positions of the planets, stars, and moon. In fact, many of them were well-versed in astronomy. Imam al-Qarāfi, who was a master of the mathematical and mechanical sciences, built a robot that, according to him, “could do everything but talk.” He unequivocally knew that the position of the moon was known with precision at any given time of the month. He says,

If a Muslim leader believes that the crescent was born based upon calculation, he is not followed, because of the consensus of the early scholars (*ijmā‘ al-salaf*) against that position. *This is in spite of the fact that ability to calculate crescent moons as well as solar and lunar eclipses is discharged with certitude. Indeed, God has set a standard that the movement of the heavenly bodies and the orbit of the seven [visible] planets is on one system for all time by the determination of the Precious, Omniscient. God has said, “The sun and the moon are on fixed courses” (55:5). In other words, they are calculable and that will never*

¹² Muḥammad al-Baqūrī, *Tartīb al-furūq* (Morocco: Maktabah al-Awqāf, 1994), 1:388–389.

¹³ My own teacher does not use them.

change, ever. This includes the four seasons; they too never change. And anything that is unalterable gives us certain knowledge.”¹⁴

Ibn al-ʿArabī describes in his autobiography that he had mastered many subjects at an early age:

By the age of sixteen, I had read from the mathematical sciences, surveying, algebra, inheritance, the books of Euclid as well as what followed of trigonometry, plane and spherical, and I had studied the positions of the planets, sun and moon and how to calculate them, and I had become proficient in the use of an astrolabe.”¹⁵

Hence, when he says, “I do not deny the foundation of the science of calculation,” he is speaking from theoretical and practical knowledge. Furthermore, the argument that the early community was unlettered, and once Muslims achieved literacy they can abandon the primitive practices of that period, is false and, in my estimation, degrading to that community.

Indeed, Ibn Ḥajar and others understood the hadith “We are an unlettered community—we neither read nor calculate” to mean something entirely different. They did not interpret the Prophet’s preface as an operative cause but rather as a descriptive statement, an important and necessary distinction in jurisprudence. Ibn Ḥajar provides the following explanation of the hadith:

“Calculate,” here, refers to astronomy and to the orbits of the planets *because only a handful of them knew such things at that time*. Thus the Prophet ﷺ has made the legal obligation of fasting contingent upon actual sighting in order to remove any burdens from his community, i.e. of having to struggle with computations of celestial orbits. This ruling continues even should later people be able to do that. Indeed, the apparent meaning of the hadith rejects any association of calculation with the legal ruling....

Nowhere did he say, “If it is obscured then ask the people of calculation.”¹⁶

Ibn Ḥajar recognizes that only a small number of people knew much about astronomy at the time, which is not dissimilar to our current situation, given the vast numbers of illiterate Muslims alive today. But there were, indeed, among the first generation of Muslims some who knew how to calculate astronomical phenomena given that some were capable of producing an intercalated lunisolar calendar. Moreover, Ibn Ḥajar understood that the ruling was a permanent one and not, as some have said, one that is contingent upon the innumeracy of his community, and thus falsely concluded that if some people learned such things later, they could switch to determining their months by calculation. Even some well-known modern scholars seem to have missed this point. Aḥmad Muḥammad Shākir, who is used as a proof for calculation today, said,

The interpretation, “This ruling continues even should later people be able to do that,” is wrong because the command to depend on sighting is explained in the hadith with an unequivocal legal rationale (*ʿillah manṣūṣah*), which is that the community is “unlettered—we neither read

¹⁴ Shihāb al-Dīn al-Qarāfī, *Furūq* (Beirut: Maktabah al-ʿAṣriyyah, 2002), 2:177.

¹⁵ Abū Bakr b. al-ʿArabī, *Qānūn al-ṭawīl* (Beirut: Dār Gharb al-Islāmī, 1990), 73-4.

¹⁶ Ibn Ḥajar al-ʿAsqalānī, *Fath al-Bārī* (Beirut: Dār Iḥyā al-Turāth al-ʿArabī, 1988), 4:102.

nor calculate.” And, it is known that a *ratio legis* (‘illah)¹⁷ exists alongside the ruling: if the first is present, the second is also present; and if the first is absent, the second is also absent (*al-‘illatu tadūru ma‘a l-ma‘lūli wujūdan wa ‘adaman*). Thus, if the community removes itself from the state of innumeracy—that is, among them are those who can read and calculate; and the people are able as a group and individuals to arrive at certainty and a definitive judgment through calculation of the start of the month; and they can be certain of this calculation with the same certainty of actual sighting or of greater certainty; and they have removed the *ratio legis* of innumeracy—then they are obliged to have recourse to this substantiated certainty. They should then resort to establishing the crescent moons with only calculation and not resort to sighting the moon unless they do not have recourse to such knowledge, such as Bedouin people or villagers, whom sound news has not reached from the scholars of calculation.¹⁸

There are several egregious mistakes in the above remarks that might lead people astray. The first mistake is that the shaykh uses one of the most subtle legal principles without any qualification. His statement that legal rationales and the rulings associated with them are inextricably bound and that the latter is contingent upon the former in its application and suspension, while largely an accepted principle, is far from absolute in its application. In fact, the principle’s application is much debated, as shown in its explication here by Ṣādiq al-Ghiryānī:

If the legal rationale is clearly defined [he means a *naṣṣ m‘aqūl*] by the Lawgiver..., or it is agreed upon by consensus such as the prohibition of wine due to intoxication, and there is nothing in the matter that is devotional (*ta‘abbudī*)[he means *ghayr m‘aqūl*],¹⁹ then in such cases the ruling is contingent upon the rationale and is suspended when the rationale is absent and applied when it is present. However, if it is devotional, then should the rationale be removed, the ruling nonetheless remains, as in the case of the Sunnah of jogging during circumambulation of the Ka‘bah...[even though its rationale, showing strength in the presence of the idolaters, no longer exists.] If the rationale is textually determinable or

¹⁷ *Ratio legis*: Latin 1. The reason or purpose for passing a law; the problem or situation that makes a law necessary. 2. basic principle or reasoning behind a law; the legal theory on which it is based. (Daniel Oran, *Oran’s Dictionary of the Law*. 3rd ed. (United States: West/Thomson Learning, 2000), 402.)

‘*Illah*: Imam al-Ghazzālī defines the ‘illah as “a description (*waṣf*) the Lawgiver has added to the legal ruling as a cause for it and made it a sign of that ruling.” Abū Ḥāmid al-Ghazālī, *al-Mustaṣfā* (Beirut: Dār al-Arqam, n.d.), 2:463.

¹⁸ Aḥmad Muḥammad Shākir, *The Commencement of Arabic Months* (Cairo: Maktabah Ibn Taymiyyah, 1987), 15.

¹⁹ According to scholars of *uṣūl*, rulings are either rationale—i.e. the reason for them is articulated by the Lawgiver or easily discernable through discursive reasoning—or suprarational (*ta‘abbudī*)—i.e. the Lawgiver has hidden it from our understanding, and thus we trust there is a wisdom known only to the Lawgiver.

agreed upon by consensus, then the suspension of the ruling based upon the absence of the rationale is a point of *ijtihād*.”²⁰

The rationale put forward of innumeracy is not textually determinable, as many did not consider that to be the rationale, and it is certainly not agreed upon. Therefore, *ijtihād* in the matter does not apply.

Imam al-Ghazzālī and others have also explained that many rulings may have only one apparent *ratio legis*, but others are hidden from us, and, for that reason, “If the rationales are multiplied, then the ruling is not necessarily suspended, due to an absence of one of the rationales.”²¹ If this principle is understood, then what follows should reveal the fallacy in such reasoning. Few scholars understood the remark of the Prophet ﷺ to be an *illah* in the ruling; rather, they understood it to be a description of the nature of his legal system, namely that God does not demand specialized knowledge for anything that He makes binding upon all of His adult servants. Thus, in the hadith, the Prophet ﷺ describes his community, essentially explaining that we are an unlettered community by nature, and makes it known to his community that his law is understandable in its general pronouncements to the simplest of people, so anyone can adhere to it. Thus, sighting the moon is an uncomplicated method that God has provided for us to determine our devotional obligations, such as for fasting in Ramadan and performing the hajj in Dhū al-Ḥijjah. Imam al-Shāṭibī states the following about this principle in a chapter he entitled, “Principles Based upon the Unlettered Aspects of the Shariah”:

It is essential that in order to understand the shariah, we must follow the understanding of the Arabs upon whom the revelation descended in their tongue. Hence, since the Arabs used certain words to connote specific things, we cannot abandon their connotations. Furthermore, if [one contends] they had no common usage of certain words, then it would be impermissible to apply a meaning to the words that that they did not have....

The Prophet ﷺ did not ask of us computation of the sun and moon’s courses in their respective ecliptics, because this was not common knowledge among the Arabs, nor was it from their sciences, and because of the precision demanded and the difficulties inherent in such a course of action. Rather, he has given us the preponderance of evidence in our rulings for the position of certainty. He has excused the ignorant, removed from them blame, and overlooked our mistakes; and this applies to many other aspects of matters in the [sacred law] in which we all participate. Thus, it is not permitted to abandon what the shariah has prescribed and go beyond this intended purpose; for, indeed, it is a dubious place and a slippery slope.²²

Another extremely crucial point that Shaykh Muḥammad Shakir made was that people are obliged to fast if they can arrive at the same certainty of, or at “a greater certainty” than an actual sighting. First of all, what can give one “greater certainty” than actually seeing the crescent with one’s own eyes? Perhaps what he meant was that modern

²⁰ Ṣādiq al-Ghiryānī, *Taṭbiqāt qawā'id al-fiqh* (Dubai: Dār Iḥya al-Turāth, 2002), 28.

²¹ Abū Ḥāmid al-Ghazzālī, *al-Mustaṣfā* (Beirut: Dār al-Arqam, n.d.), 2:489.

²² Abū Ishāq al-Shāṭibī, *al-Muwāfaqāt* (Beirut: al-Maktabah al-‘Asriyyah, 2003), 2:58-66.

science provides greater certainty than our own senses (sometimes true, but a dangerous premise). However, in the case of visibility of the crescent, it is simply not true. Perhaps this conclusion is arrived at based upon a lack of knowledge of modern astronomy. It appears that many modern scholars who have written advocating calculation are under the assumption that astronomers can now predict visibility with one hundred percent accuracy. While that may be true if they use as a criterion a conjunction separation of greater than twenty-four hours somewhere on the earth, it is not the case if it is less than twenty-four hours. It is simply unproven and thus not scientific. Only recently, due to unrelenting yearly inquiries by Muslims, visibility prediction has elicited some scientific interest at the British Greenwich and the U.S. Naval Observatories. In fact, on the U.S. Naval Observatory's website, the following is written in a section designed for Muslims:

The visibility of the lunar crescent as a function of the Moon's "age"—the time counted from New Moon—is obviously of great importance to Muslims. The date and time of each New Moon can be computed exactly (see, for example, Phases of the Moon in "Data Services") *but the time that the Moon first becomes visible after the New Moon depends on many factors and cannot be predicted with certainty.* In the first two days after New Moon, the young crescent Moon appears very low in the western sky after sunset, and must be viewed through bright twilight. It sets shortly after sunset. *The sighting of the lunar crescent within one day of New Moon is usually difficult.* The crescent at this time is quite thin, has a low surface brightness, and can easily be lost in the twilight. Generally, the lunar crescent will become visible to suitably-located, experienced observers with good sky conditions about one day after New Moon. However, the time that the crescent actually becomes visible varies quite a bit from one month to another. The record for an early sighting of a lunar crescent, with a telescope, is 12.1 hours after New Moon; for naked-eye sightings, the record is 15.5 hours from New Moon. *These are exceptional observations and crescent sightings this early in the lunar month should not be expected as the norm. For Islamic calendar purposes, the sighting must be made with the unaided eye.*²³

Many regard this source as representing the most advanced level of scientific knowledge on our planet, and yet its own scientists admit they cannot predict with any certainty that the crescent will be sighted on the first day of its astronomical birth anywhere on the planet with a naked eye. Most new moons cannot be seen before twenty hours. According to our premodern Muslim astronomers—who through countless nights of observation and following the crescents month after month, year after year, in the service of Islam, using highly sophisticated instruments determined exact degrees of elongation based upon countless eyewitness observations—the crescent moon must be at least twelve degrees above the horizon after sunset, which allows for a setting time on average of almost fifty minutes, and this is the visibility criteria that our traditional masters of astronomy provided on accurate visibility arcs produced in the periods of Muslim renaissance.

George Saliba, a leading expert on Islamic astronomy, says, "Although there was a religious prohibition on beginning the lunar month of fasting according to the computed

²³ <http://aa.usno.navy.mil/faq/docs/islamic.html>

time, a *zīj* text [computed astronomical tables] often included tables of lunar visibility to answer that problem specifically.”²⁴ He also notes that Muslim scholars clearly distinguished between astrologers and astronomers²⁵ and that, after the thirteenth common era century, astronomers held public offices in all of the Muslim states. Their offices determined prayer-times, and lunar and solar eclipses, and produced lunar visibility charts that helped people know when the new moon would most likely appear and where best to look for it. Saliba states, “As a consequence, all problems that had any religious bearing were incorporated into mathematical astronomy and treated in those texts irrespective of the religious injunctions.”²⁶ Thus, scholars of sacred astronomy predicted the birth and probable appearance of the new moons with great precision, regardless of the injunction against using those predictions to start the month. The foremost authority on Islamic science, specifically astronomy, Dr. David King remarks that the Muslim astronomers predetermined lunar visibility by calculating the “difference in setting times over the local horizon. If the latter was forty-eight minutes or more, the crescent would be seen, if it was less, the crescent would not be seen. Using this condition and computing specifically for the latitude of Baghdad, the astronomer al-Khawarizmi, in the early ninth century, compiled a table showing the minimum distances between the sun and moon (measured on the ecliptic) to ensure crescent visibility throughout the year.”²⁷ David King continues:

During the following centuries Muslim astronomers not only derived far more complicated conditions for the visibility determination but also compiled highly sophisticated tables to facilitate their computations. Some of the leading Muslim astronomers proposed conditions involving three different quantities, such as the apparent angular separation of the sun and moon, the difference in their setting times over the local horizon, and the apparent lunar velocity. Annual ephemerides or almanacs gave information about the possibility of sighting at the beginning of each month. In brief, the achievements of the Muslim astronomers in this area were impressive.”²⁸

From this, it should be quite clear that the Muslim scholars were not backward or scientifically-challenged, unable to understand that determining probable moon visibility was an exact science, even in their day, as many of them acknowledged. On the contrary, the great ones who wrote on the subject understood both the science of the problem and entailing juristic considerations far better than any of us writing on the subject today.

²⁴ George Saliba, *A History of Arabic Astronomy*. (New York: NYU Press, 1994), 78.

²⁵ An important note here that some have ignored entirely in their attempt to argue that the main reason scholars rejected calculation was that astrologers were the people who calculated. That is false. Many Muslim astronomers were completely opposed to astrology and considered it prohibited by sacred law. Having said that, we must note that every astrologer was an astronomer but not every astronomer was an astrologer. Astrologers, even today, are dependent upon accurate charts of planet, sun and moon positionings in order to practice their craft. Isaac Newton, a redoubtable astronomer, was also an astrologer as well as Copernicus and Brahe!

²⁶ *Ibid.*, 79.

²⁷ David A. King, *Astronomy in the Service of Islam* (England: Variorum, 1993), 248.

²⁸ *Ibid.*, 248.

About that, I have no doubt. They were scholars of the highest caliber, and we do them a great disservice to believe that they did not calculate because “they had not yet distinguished between astronomy and astrology,” or that they were incapable of calculating the moon’s birth with any accuracy.

The Five Schools on Moon Sighting

While many modern Muslims have abandoned following any particular school of law, the overwhelming majority still do so even nominally. In the United States, the Ḥanafī and J̄afarī schools are widespread, with many people adhering to the other canonical schools as well.

This section will simply summarize the positions of the five schools of jurisprudence that al-Azhar University recognizes as valid.

In the excellent text, *Encyclopedia of Islamic Jurisprudence*, produced by Kuwait’s Ministry of Religious Affairs, the following opinions are presented:

The relied upon opinion of the Ḥanafī school is that sighting the moon is a condition for the obligation of Ramadan and no consideration is given to the astronomers even if they were trustworthy. Moreover, whoever relies on their opinion has violated the sacred law (*khālafa sh-sharʿ*).... Imam Mālik prohibited reliance upon calculation in ascertaining the crescent moon’s birth and said, “Any imam who relies on calculation is neither to be imitated nor followed.” Imam al-Bājī says, “If anyone did rely on calculation, I opine that he should not consider his fasting sound based upon calculation, and return to sighting or the completion of thirty days. If that results in him having to make up any days, he should....”

As for the Shāfiʿī scholars, Imam al-Nawawī says, “Fasting is not an obligation unless the month has arrived. Furthermore, its commencement is ascertained through sighting the crescent. If, however, it is clouded over, then people are obliged to complete thirty days of Shaʿbān. They should then commence their fast irrespective of whether the next day is clear, or more or less cloudy. Thus, the means by which the month is determined are contained in either sighting or completing thirty days. There is no room for reliance upon calculation....”

The Ḥanbalīs do not depend on astronomical calculation, even if it was repeatedly proven to be accurate.²⁹

In fact, this is the agreed upon position of the four schools, as recorded by al-Wazīr b. Ḥubayrah (d. 560 AH) in his book on the consensus of the four Sunni imams: “The four schools agreed that no consideration is given to knowledge of calculation and the lunar phases in order to determine the start of fasting, whether the people had knowledge of such things or did not; Ibn Surayj of the Shāfiʿī school dissented.”³⁰

Commenting on the legal text, *Sharāʿ al-Islām*, the eleventh century scholar Sayyid Muḥammad b. ʿAlī al-Musāwī al-ʿĀmilī explains the dominant position in the

²⁹ al-Musūʿat al-Fiqhiyyah, *Wizārat al-awqāf wa shuʿūn al-Islāmiyyah* (Kuwait: ,1992), 22:33-4.

³⁰ Wazīr Yaḥyā b. Muḥammad b. Ḥubayrah, *al-Ijmāʿ ʿind aʿimmat ahl al-sunnah al-arbaʿah* (Riyadh: Maktabat al-ʿUbaykān, 2003), 77.

Jaʿfarī school on this matter. He says, “No consideration is given to predetermined schedules [for Ramadan].”³¹ His usage of “predetermined schedules” refers to the calculation of the new moon based upon determining the elongation, of after lunar and solar conjunction. He continues:

Undoubtedly, no consideration should be given to this method due to the multiply-transmitted narrations that establish that the months’ onset is to be determined by one of two methods: either a physical sighting of the crescent (*ru’yah*), or the completion of thirty days of the previous month. Indeed, had recourse to an astronomer been a proof, the scholars would have guided us to that position.... The astronomers admit that its sighting (*ru’yatuh*) is only possible [and not certain], whereas the Lawgiver has made the rulings [that relate to fasting] contingent upon the actual sighting, and not the aforementioned arc of visibility].³²

The shaykh goes on to remark that while there is a weak opinion that calculation may be used if the crescent is obscured, it is negligible.³³

I think we can conclude from the above two sections that that each of the schools, with the exception of the Ḥanbalī school, have weak positions supporting calculation, but none allow calculation in lieu of actual sighting; all of them stipulate that one can resort to calculation only if, on the thirtieth night, there is a cloud-cover that prevents seeing the crescent and astronomers have indicated that the moon would be visible. It was also shown that they stipulated that the arc of elongation after sunset must be at least twelve degrees, and that would mean at least forty-eight minutes would have passed before the crescent set. The current arc being used by ISNA’s mathematicians is nine degrees,³⁴ which leaves less than a half hour before the crescent sets. Hence, the crescent moon would be, for all intents and purposes, impossible to see unless conditions were perfect and the time and coordinates of the particular spot placed it in an optimal position in relation to the sun; even in that case, it would be extremely difficult to see with the naked eye.

Magnified Crescents and Confusion: Signs of the Last Day

According to our Prophet ﷺ, one of the signs of the latter days is the magnification of crescent moons and people stating upon seeing a new moon that it is actually two days old. In a hadith related by Imam al-Ṭabarānī, the Prophet ﷺ said, “Among the signs of the end of time is the swelling of the crescent moons (*intifākhul-ahillah*), and also that people will see a first day crescent moon and remark, “It is clearly two days old!” The first sign is people’s perceiving the crescent moons as inflated. Imam al-Ghumārī, the great Moroccan scholar of hadith said, “This hadith clearly refers to

³¹ Sayyid Muḥammad b. ʿAlī al-Musāwī al-ʿĀmilī, *Madārik al-aḥkām* (Beirut: Mu’assasat Āl al-Bayt, 1990), 6:175-176.

³² Ibid., 6:175-176

³³ Ibid., 6:176

³⁴ This was confirmed by telephone with the gracious and learned Dr. Khalid Shaukat, who has worked many years tirelessly on this subject. May God reward him for his efforts.

modern instruments.... Indeed, the swelling of the crescents is not to be taken literally..., but it explains how they will appear through a telescope.”³⁵

Imam al-Ghumārī believes the second part is related to the first. The second sign is that people see a new moon and think, due to its size, that it is two days old. In fact, I have heard this remark on countless occasions from Muslims who see a new moon; because it is over thirty hours old, which is when new moons are normally sighted, they think it is too big to be a newborn crescent and declare that is at least two days old. This results from people’s alienation from natural order and the fact that few modern people ever observe the phases of the moon from birth to conjunction and rebirth. In another extraordinary hadith, the Prophet ﷺ said, “Among the signs of the end of time is that the crescent will be seen with the naked eye, and it will be said, “This is two days old.”³⁶ In another variant, the narration states, “Among the signs of the end is the hopping of the crescents (*intifāju l-ahillah*).” Imam al-Ghumārī’s interpretation is that the news of the crescent will spread immediately throughout the world. [Since the word is taken from the hop of a rabbit (*intafaja l-arnab*, the rabbit hopped). And God knows best.

Another problem that moderns face is that, due to light pollution, people today rarely see the stars. I have no doubt that if there were no electric lights at night in our cities, people would be far more inclined to think deeply about their purpose on this earth, “The heavens declare your majesty.” People once followed moon phases throughout the world. Most modern people have never seen a crescent emerge before their naked eyes out of the twilight. On the few occasions that I have, I have been dumbstruck by the event and indeed “shouted for joy,” (*Allāhū akbar*). Because people no longer see the crescent, they cannot understand how a first day crescent can show up so high in the sky. However, some new moons are born over thirty hours after the conjunction and, depending on where it shows up on the earth and the various time zones, it will indeed differ in size. But our Prophet ﷺ did not leave us without guidance.

Imam Muḥammad b. ‘Abd al-Rāziq writes:

No consideration should be given to the relative size whether large or small or to the time in which the crescent sets. It is related in the *Ṣaḥīḥ* of Imam Muslim the following from Abū al-Bakhtarī, “A group of us had set out to perform ‘Umrah [just before Ramadan], and we alighted upon the valley of Nakhlah. We all saw the crescent moon [of Ramadan]. Some us said, “O, it is at least three days old,” and others said, “No, it is only two days old.” When we arrived, we met Ibn ‘Abbās and told him that we had seen the crescent. He asked, “On which night did you see it?” We replied, “On such and such a night.” To this, he responded, “The Messenger of God ﷺ said, ‘God has extended the period [in which the crescent is seen] in order that it be seen (*Inna Allāha maddahu li l-r’uyah*).’ It was, in fact, the first night in which you saw it.”³⁷

³⁵ Aḥmad b. al-Siddīq al-Ghuwārī, *al-Aḥādīth al-nabawiyyah li mā akhbara bihi Sayyid al-Bariyyah* (Damascus: Dār al-Albāb, 1999), 62-3. (Note: The hadith is in *al-Ṣaḥīḥ*.)

³⁶ Ibid, 62. The hadith is related by Dāraqutnī and al-Ṭabarānī in *al-Awṣāt*.

³⁷ al-Hāj Muḥammad b. ‘Abd al-Wahhāb b. ‘Abd al-Rāziq al-Andalusī al-Fāsī, *al-‘Adhbu al-zulāl fī mabāhiṭh r’uyati al-hilāl* (Casablanca: Dār al-Nashr, 2002), 1:250.

Imam Abū Bakr says about the phenomenon of a larger crescent on the first day, “Our scholars have said that no consideration is given to either the crescent’s largeness or its slimness. Indeed, it is related that ‘Umar رضي الله عنه said, ‘Some new crescent moons are bigger than others, so if you see one after the meridian, consider it for the following night.’”³⁸ This year some people will invariably see the new crescent on its actual first night and exclaim, “O, that is at least two days old; so we started on the right day.” And, if they don’t see it until the second night, some will say, “O, that is three or four days old!” But that is not the issue. The point is that they did not start with certainty because neither they, nor anyone they know, or know who knows, saw it. It was calculated in someone’s head and dispersed via the internet. The Prophet of God ﷺ spoke the truth.

Another important sign of the latter days is the general confusion that occurs in both religious and worldly matters. The Prophet ﷺ said, “In the latter days, people of composure will become bewildered and confused.”³⁹ Unfortunately, concerning this specific issue, due to a lack of adherence to the two things the Prophet ﷺ left for us—the Book (which states, “Whoever witnesses the month let him fast”) and the Sunnah, (which states, “Do not fast until you see it, and do not break your fast until you see it”)—have been abandoned, and thus more confusion is added to the already existing confusion.

Conclusion

God has made the heavens one of His greatest signs. He has told us that Muslims are those “who reflect on the creation of the heavens and the earth and the alteration of night and day. Surely in that are signs for those who possess innermost understanding” (3:190). He has hidden the unseen and the future from us and warned us that “It is God who has knowledge of the end of time, and who showers the rain, and who knows what is in the wombs. No soul knows what it will earn tomorrow, and no soul knows in what land it will die: but God is omniscient, completely aware.” (31:34). Yes, there are discernable patterns in the world that make up the empirical sciences, but they have limitations, and we should take care lest in our arrogance we think that we have control over our lives and natural order:

Then when the earth takes on golden ornamentation [lights of our cities seen from space], and is all adorned, and people think they have power over it. Our order comes to it by night or by day; then we have it mown down, as if it had not flourished the day before. Thus do we explain the signs to people who reflect. And God calls to the abode of peace, and guides anyone at will to a straight path” (Qur’an 10:24-25).

God has hidden from us the power to predict the actual appearance of the crescent moon on the first day. Even modern scientists admit this. Yet, we wish to fit God’s plans into our plans instead of fitting our plans into God’s plans. Convenience store Islam is the Islam of the day, where we can buy a pre-packaged Islam that fits into our busy schedules. But Ramadan is God’s month; it is a time of slowing down and reflecting, of looking at our lives and questioning ourselves, “Are we in harmony with God’s creation. Are we bypassing signs right before our eyes?” God has veiled Ramadan’s greatest night from us,

³⁸ Qadi Abū Bakr, *Ahkām al-Qur’ān* (Beirut: Dār al-Kutub al-‘Ilmiyyah, 1988), 1:141.

³⁹ Abū ‘Īsa Muḥammad b. ‘Īsa al-Tirmidhī, *Jāmi‘ al-Tirmidhī* (Riyadh: Dār al-Salām, 1999), 548, no. 2405.

and if He chooses to ask us to inconvenience ourselves just a little bit for His sake to seek out Ramadan's onset, then praise be to God. I find it altogether odd that a month that is meant to teach us patience and is called "the month of patience," is no longer patiently waited for by eager Muslims to see what God has in store for them tonight or perhaps tomorrow night. I believe sighting the moon is an intended purpose of Ramadan. It is indeed an act of worship, as the Prophet ﷺ has clearly said, "The best of God's servants are those who monitor the sun, crescents, and stars as a way of remembering God."⁴⁰ Every morning before dawn, the Prophet ﷺ would awaken, go out into the late night air, and look up in the heavens and recite the final verses of Āl 'Imrān: "Surely in the creation and the heavens and the earth, and the alternation of the night and the day are signs for people...."⁴¹ The signs are indeed clear for those who reflect.

Ibn Taymiyyah wrote hundreds of years ago,

It is impossible to determine, by means of mathematics, the exact time the crescent moon appears. For even though the astronomers may know that the light emanating from the moon is a reflection of the sun, and that when the two bodies meet in the conjunction, the light of the moon disappears, and when it separates from the sun, it regains its light, yet the best they can do is to determine exactly, through calculation, the distance between the moon and sun when the latter sets.... If we did assume that they managed to determine the moon's position at sunset, this would not prove that the crescent had actually been sighted. Visibility is a sensory matter and is affected by several factors, such as the clarity or density of the atmosphere, the high or low position of the celestial body, and finally, the strength or weakness of one's eyesight.... When they realized that the shariah commands the sighting of the crescent moon, they desired to determine it by means of mathematics, and thus they went astray and led others astray. Those who argue that the crescent cannot be seen at twelve or ten degrees, etc., have erred, for one person can sight it at the smaller number of degrees while another cannot at the same degree. They have resorted neither to reason nor to revelation, and because of this, the eminent scholars in their field have rejected their views.⁴²

What Imam Ibn Taymiyyah said is as valid today as it was when he wrote it. Several hundred years ago, a scholar in Libya was put to death because he refused to start Ramadan with the Fatimid ruler's decree of calculation. He spoke out against the innovation and lost his life for obeying God and disobeying man. Thank God we live in a time and place in which we can freely dissent if our conscience tells us we must. May that Imam's life not be in vain. Our Prophet ﷺ did not leave us with out guidance, nor did our scholars leave us without elucidation of that guidance for they are the "inheritors of

⁴⁰ The hadith is related in Imam al-Ḥākim's *Muṣṭadrak* and is sound. As quoted in al-Imam Aḥmad al-Khatīb al-Baghdādī, *ʿIlm al-Nujūm* (Dār al-Kutub al-ʿIlmiyyah, n.d.), 22-23.

⁴¹ Imam Muḥyi al-Dīn al-Nawawī, *al-Adhkār* (Dār al-Minhāj, 2005), 67.

⁴² Jalāl al-Dīn al-Suyūṭī, *Jahd al-qarīhah fī tajrīd al-naṣīḥah mukhtaṣir al-radd ʿalā al-Manṭiqiyyīn* (Dār al-Naṣr li al-Ṭibāʿah, 1970). And Ibn Taymiyyah, Trans. Wael B. Hallaq, *Against the Greek Logicians* (Oxford: Clarendon Press, 1993), 140-141. (Note: Some retranslating done.)

the prophets.” In these latter days, the Sunnah is disappearing from the face of the earth. The Prophet ﷺ came to teach the simple and sophisticated, the meek and the mighty, and he gave each his dignity and his place. In following his example, we follow the best in ourselves, and in leaving his guidance, we open ourselves to great calamities and tribulations. Allah, the Exalted, said, “So let those who oppose his command beware lest a trial befall them or a painful chastisement” (24:63). The Prophet ﷺ has commanded us in a hadith that is of no less authority than the Qur’an itself: “Fast upon *seeing* the crescent, and break your fast upon *seeing* it; *and if it be obscured, then calculate it.*” The meaning is clear as has been clarified by the illustrious imams quoted in this paper. They are my proof; after God and then His messenger, I have no others. What is left is to follow their guidance. And may God give us the success to do so. And Allah knows best.