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**AN ISLAMIC LEGAL ANALYSIS OF THE ASTRONOMICAL  
DETERMINATION OF THE BEGINNING OF RAMAḌĀN**

By Mokhtār Maghrāoui, August 2007

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*In the name of Allāh, the Loving, the Love-Giving  
All praises are due to Allāh and peace and salutations upon His messenger,  
Muḥammad, his family, companions and followers*

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### **Introduction**

The decision last year by the Fiqh Council of North America (hereafter “Fiqh Council”) to use astronomical calculations to determine the month of Ramaḏān raised a number of questions and concerns. This paper will attempt to address those concerns and demonstrate that the conclusion of the Fiqh Council is incorrect and contravenes 1) a legal analysis (*uṣūlī* / اصولي) of the available texts on the subject; 2) an examination of the scholarly record; and 3) an understanding of the objectives (*maqāṣid* / مقاصد) of Islamic law.

The position of the Fiqh Council is articulated in a position paper entitled, *Astronomical Calculations: A Fiqhi Discussion*<sup>1</sup>. References to the paper will be indicated in parenthesis by the annotation “Paper” together with the page number. References to the statement<sup>2</sup> of the Islamic Society of North America (ISNA) regarding the decision, published on September 14, 2006, will be indicated in parenthesis by the annotation “Statement” together with the page number.

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<sup>1</sup> See: <http://www.isna.net/fileadmin/ temp /FIQH/Calculations-Final%20 2 .pdf>

<sup>2</sup> See: [http://www.isna.net/index.php?id=35&backPID=290&tt\\_news=774](http://www.isna.net/index.php?id=35&backPID=290&tt_news=774)

Two important points deserve mention. First, as the intent of this paper is not to present a detailed discussion of Islamic scholarship on this issue, the opinions of scholars, classical and modern, will be cited as they are represented in the position paper. As will become evident, the scholarly legacy on this issue is clear and requires little explanation. Second, while some arguments of the position paper are quite unique, others faithfully represent the arguments raised by proponents of unconditional astronomical calculation. As such, a discussion of the arguments articulated in the position paper will address most, if not all, of the arguments for unconditional astronomical calculation of the beginning of Ramaḍān.

This paper will present the relevant texts from the Qur'ān and Sunnah on the subject, summarize the key arguments for astronomical calculation, and then analyze each argument separately.

The intent of this paper is to present an alternate perspective and one that is believed to be more in harmony with both the letter and spirit of Islamic law. May Allāh grant us sincere goodwill to one another and may He guide us to what is most beloved to Him.

### **Relevant texts from the Qur'ān and Sunnah**

The essential texts are the following:

1. فمن شهد منكم الشهر فليصمه

Therefore, whoever of you sights (*shahida* / شهد) the month, let him fast it.  
(Qur'ān, 2: 185)

2. ... صوموا لرؤيته و افطروا لرؤيته ...

Fast at its sighting, and break (end) the fast at its sighting. (Muslim)

3. ... لا تصوموا حتى تروا الهلال و لا تفطروا حتى تروه ...  
Do not fast until you sight the crescent and do not break (end) the fast until you sight it. (Bukhārī)
4. ... نحن أمة أمية لا نكتب و لا نحسب ...  
We are an unlettered nation. We do not write nor count. The month is like this and like this.... (Bukhārī, Muslim)
5. ... إذا رأيتموه فصوموا و إذا رأيتموه فأفطروا. فإن غم عليكم فأقدروا له [ثلاثين]  
If you sight(ed) it, then fast; if you sight(ed) it, then break (end) the fast; and if your vision is obscured then (*uqdurū lah* / أقدروا له). (Bukhārī, Muslim)
6. ... أكملوا العدة ثلاثين  
...Complete the counting to thirty (days). (Bukhārī, Muslim)

### **Arguments advanced for astronomical calculation to determine the month of Ramaḍān**

The following are the essential arguments advanced. In some cases, arguments have been grouped together for ease of discussion.

1. Seeing (*ru`yah* / رؤية) the moon does not necessarily mean actual physical sighting. Seeing may mean pondering, ascertaining or having certainty (Paper, 19-20).
2. The imperative command, *uqdurū lah* / أقدروا له, means calculate the stages and months of the moon (Paper, 53). The fact that ibn ‘Umar (*Allāh be pleased with them both*) fasted on the 30<sup>th</sup> if it was cloudy

- “categorically refutes the argument” that actual sighting of the crescent is required (Paper, 36).
3. The command to physically sight the crescent was due to the fact that Muslims at that time did not know how to write or calculate. The Muslim community today does have knowledge in these areas. Actual sighting is no longer necessary (Paper, 59-61).
  4. Sighting the crescent is only a means to establish the month. Modern science can calculate the birth of the moon and the beginning of the month with accuracy (Paper, 23, 59-61). Moreover, we do not use actual sighting for other acts of worship (Paper, 21); and Rasūlullah (صلى الله عليه و سلم) did not physically sight the moon on the occasion of his month-long separation (إيلاء / *ilā`*) from his wives (Paper, 37).
  5. A number of scholars of old have argued in favor of accepting calculations “in part or totality” and the number of scholars inclined toward partial or total acceptance of astronomical calculations is increasing (Paper, 62-63).
  6. Muslims all over the world, especially in the West, suffer a great deal of hardship (*mashaqqah* / مشقة) due to physical sighting (Paper, 23). Additionally, physical sighting is a cause of disunity and discord (Statement, 1-2).
  7. The sighting of the crescent is not an act of worship (*ta'abbudī* / تعبدى). It is simply a means to know the entry of the month of Ramaḍān (Paper, 61). Since astronomical calculation can accurately determine the birth of the new moon, we should use the birth of the moon as the standard to determine the beginning of Ramaḍān.

## A legal analysis of the arguments for unconditional calculation

*Analysis of argument one:*

1. Seeing (*ru`yah / رؤية*) the moon does not necessarily mean actual physical sighting. Seeing may mean pondering, ascertaining or having certainty (*Paper, 19-20*).

The relevant texts for this argument are texts two and three, “Fast at its sighting, and break (end) the fast at its sighting” and “Do not fast until you sight the crescent and do not break (end) the fast until you sight it.” The following observations are important.

Linguistically, the word “*hilāl / هلال*,” which occurs in the second text as well as verses in the Qur’ān, means a crescent – that is, something visible. The derivative, *istahalla / استهل*, refers to the cry of an infant after birth. *Hilāl / هلال* traditionally referred to a crescent that is at least one or two nights old and does not therefore refer to the birth of the moon or conjunction (*muḥāq / محاق*), which cannot be seen with the naked eye.

Second, the word seeing (*ru`yah / رؤية*) in the second text must be interpreted in its literal (*ḥaqīqī / حقيقي*) sense in accordance with the basic rule in legal hermeneutics: a word must be taken in its literal and not metaphorical (*majāzī / مجازي*) meaning unless it is impossible to understand it literally and there is a circumstantial reason (*qarīnah / قرينة*) for assigning it a metaphorical meaning. It is not impossible to understand *ru`yah / رؤية* to mean seeing. The physical sighting of the moon was always the practical understanding of the word *ru`yah / رؤية*.

Moreover, the physical sighting of the moon is a communal obligation (*wājib kifāyah* / واجب كفاية) and not a personal obligation (*wājib ‘ayn* / واجب عين). The case, therefore, of a basement prisoner’s estimation in no way proves that sighting is not required, first, because sighting is not compulsory on the prisoner as a personal obligation and, second, because the prisoner’s estimation is a necessary consequence of his specific condition (Paper, 18).

Third, and most emphatically, the third text, “**Do not fast until you sight the crescent...**,” uses the strongest, most unequivocal language that sighting and only sighting is the first means of ascertaining the beginning of the month. The linguistic tool of exclusivity, “*lā* / لا” ... “*ḥātta* / حتى,” is employed – meaning, to paraphrase, “You must fast if and only if you sight the moon.” This third text qualifies and removes any ambiguity in the second text, “Fast at its sighting, and break (end) the fast at its sighting,” as to whether sighting is the only means to begin fasting.

In summary, an analysis of the texts and their language leads to the conclusion that **the Lawgiver explicitly connected by cause the beginning of the month of Ramaḍān to the sighting of the moon** and the sighting of the moon only. **We have no authority to connect the beginning of the month to anything else, including the birth of the moon.** Cause (*‘illah or sabab* / علة أو سبب) is a declaratory injunction (*ḥukm waḍī‘* / حكم وضعي) in Islamic jurisprudence. The individual who is addressed by the law (*mukallaf* / مكلف) has no share in this fact. This means that it is the Lawgiver who assigns the value of “cause” to lead to a specific verdict. **Changing the cause of commencing the fast in Ramaḍān from sighting the crescent (*hilāl*) to sighting the state of conjunction (*muḥāq*) or the birth of the moon is not in the permissible scope or authority of any scholar.**

*Analysis of argument two:*

2. The imperative command, *uqdurū lah / أقدروا له*, means calculate the stages and months of the moon (Paper, 53). The fact that ibn ‘Umar (Allāh be pleased with them both) fasted on the 30<sup>th</sup> if it was cloudy “categorically refutes the argument” that actual sighting of the crescent is required (Paper, 36).

The sixth text teaches that “If you sight(ed) it, then fast; if you sight(ed) it, then break (end) the fast; and if your vision is obscured then (*uqdurū lah / أقدروا له*).” This text deals with the case of being unable to see the crescent. The Prophetic advice in this case was an imperative command, *uqdurū lah / أقدروا له*. The imperative, *uqdurū / أقدروا*, is termed a homonym (*mushtarak / مشترك*) in legal analysis, meaning a word that carries two or more meanings with equal probability. Such a word cannot be said definitively to have only one meaning. In the seventh text, for example, Rasūlullah (صلى الله عليه و سلم) uses another word with regard to the same process: “...Complete (*akmilū / أكملوا*) the counting to thirty (days).” The word employed here is “*akmilū / أكملوا*” or complete. *Uqdurū / أقدروا* could therefore mean “*akmilū / أكملوا*” or, more generically, a process of *ijtihād*. *Taqdīr* (تقدير) means thinking and reflecting to resolve a matter and to prepare for it (See *Lisān al-‘Arab*). It also means estimation and measurement.

There was some difference among early companions and later scholars about the meaning of *uqdurū / أقدروا*. A minority, in particular ibn ‘Umar (Allāh be pleased with them both), the narrator of the text, interpreted it to mean that if the moon was obscured from vision, the next day should be taken to be the commencement of fasting as a precaution. His choice of the meaning of *uqdurū / أقدروا* was therefore “think and reflect to resolve the matter.” A majority of scholars disagreed with him. Proponents of unconditional astronomical calculation conclude that “the fasting on the cloudy day of the 30<sup>th</sup> without actual

sighting of the crescent, categorically refutes the argument of the so called majority that either actual sighting by a naked human eye or completing 30 days is the only prescribed method for confirming the month of Ramaḍān as well as the other Islamic months” (Paper, 36). A closer examination of this issue indicates that this reasoning is deeply flawed. **Ibn ‘Umar’s (*Allāh be pleased with them both*) practice says nothing about sighting and only speaks to a conditional case – if the crescent is obscured from view.** In addition, the only contestable issue is the proper course of action if the crescent is obscured from view: should the next day be fasted as a precaution, as Ibn ‘Umar (*Allāh be pleased with them both*) did, or should the month simply be completed to 30 days. **This, and only this, is the point of difference.** In either case, there is no departure from the letter and the meaning of the text.

Second, and more critically, is the observation that **the imperative of *uqdurū* / أقدرُوا is conditional upon the moon being obscured from vision.** The texts are explicit (*ṣarīḥ* / صريح) and clear (*wāḍiḥ* / واضح) on this point. ***Uqdurū* / أقدرُوا is a response to a specific condition (*sharṭ* / شرط); it is not an unrestricted dispensation.** Even if *uqdurū* / أقدرُوا means calculate in Arabic etymology, that calculation (whatever it may be) can only be utilized when physical sighting is impossible. **To advance calculation over sighting is therefore untenable, logically and legally.**

In summary, an analysis of the relevant texts and the language employed by those texts leads to the conclusion that the imperative command *uqdurū* / أقدرُوا has many probable meanings – to calculate, as claimed by some proponents of unconditional astronomical computations, being only one of them. More importantly is the fact that the imperative of *uqdurū* / أقدرُوا له is only relevant if the crescent cannot be physically sighted.

*Analysis of argument three:*

3. *The command to physically sight the crescent was due to the fact that Muslims at that time did not know how to write or calculate. The Muslim community today does have knowledge in these areas. Actual sighting is no longer necessary (Paper, 59-61).*

The essence of this argument is that the command to physically sight the moon was due to the reason (*al-'illah / العلة*) in text four, “We are an unlettered nation. We do not write nor count (or compute). The month is like this and like this...” Since the reason does not exist any longer in modern times – that is, we now know how to write, count and compute – we no longer need to rely on physical sighting. **This line of reasoning poses significant difficulties.**

First, the reason (*al-'illah / العلة*) for physical sighting – meaning illiteracy in writing, counting or computing – is not explicit (*ṣarīḥah / صريحة*) or definitive (*qaṭ'iyyah / قطعية*) in the texts about sighting the crescent; it is implicit (*ghayr ṣarīḥah / غير صريحة*) and probable (*ẓanniyyah / ظنية*). **The reason for physical sighting has not been given by the Lawgiver in the explicit words of the text (*manṭūq / منطوق*) through any instruments of language that indicate operative causality ('illah / علة).** The Lawgiver, for example, does not say, “We are an illiterate nation. **Because** of that, or **therefore**, fast when you see the moon...” We are instead inferring the cause from the texts (*mafḥūm / مفهوم*) – reading it in, as it were. It is also worthy of note that the fourth text is not legislative. The text does not purport to legislate anything through either an imperative command (*'amr / أمر*) or any other instrument. On the contrary, the text is informative – one of many reasons why early scholars did not take illiteracy to be the operative cause for the requirement of sighting the crescent moon. Reading the fourth text, it is clear that **if the issue of illiteracy is related to anything, it connects, at most, with the issue of whether the month has 29 or 30 days.** The logical conclusion of this reading is that if illiteracy changes,

this will affect whether the month is 29 or 30 days. This is, however, impossible since the lunar month is always 29 or 30 days and is illustrative of the fact that illiteracy is not intended to be an operative, effective cause. The Lawgiver, instead, is informing us that **in this particular matter of fasting we do not compute** – a meaning ascertained by text number three. **The cause of illiteracy for sighting the moon is thus, at best, probable, even speculative.**

**The second, more serious difficulty is that if illiteracy is the assumed reason for physical sighting and if we assume that the imperative *uqdurū* / أقدروا means to calculate, there is a clear contradiction (*ta'āruḍ* / تعارض) between texts four and five.** Rasūlullah (صلى الله عليه و سلم) would then be commanding a nation that did not know how to count or to compute to count and compute. This is a clear violation of the legal axiom that there is no legal responsibility for those who are unable to bear it: *lā taklīfa illā bi maqdūr* / لا تكليف إلا بمقدور. Subjecting the texts to such inconsistencies is intolerable.

An application of correct legal reasoning remedies any inconsistencies and misinterpretations. Text three, “Do not fast until you sight the crescent and do not break (end) the fast until you sight it,” is explicit (*ṣarīḥ* / صريح) and definitive (*qaṭʿī* / قطعي) in the meaning it conveys (*dilālah* / دلالة), and the legal ruling is extracted directly from the wording (*manṭūq* / منطوق) of the text without any inference or indirect reasoning. Legal reasoning thus dictates that in the event of an apparent contradiction, we take the definite over the probable, the explicit over the implicit, the articulated over the inferred. The third text, therefore, truly informs us of the intent and law of the Lawgiver – to fast only when you physically sight the crescent – and not the speculative interpretation advanced by a reading of the fourth text that, given literacy, we may now dispense with the physical sighting of the crescent. **A consequence of this analysis is that either *uqdurū* / أقدروا does not mean compute in this context or that lack of**

**literacy is not the effective cause for the commandment of sighting the crescent.**

The definitive third text about not fasting until you see the moon also opens up other understandings of the text about Muslims being an illiterate community. Perhaps, during the time of the early Muslims there were alternative methods available and the text closed the door to those; or perhaps the text, in the Infinite Wisdom of the Lawgiver, protects the Muslim community from the current, highly speculative methods of ascertaining when the crescent is sightable or not. But one fact is certain: This analysis preserves both the letter and spirit of all texts on the subject and does not violate a core principle of legal reasoning which holds that ensuring the operability of a text is more fundamental than rendering it redundant: *l'mālu al-naṣṣ awlā min ihmālihi / إعمال النص أولى من إهماله* .

Another important observation: **the argument advanced for unconditional astronomical calculation preserves neither the principle of the objectives of law (*al-maqāṣid al-shar'iyya* / المقاصد الشرعية) nor the integrity of specific texts. It violates both.** It infers a cause that may not be the real cause and, in doing so, leads to the inoperability of a definitive text. **Islamic legal reasoning requires that general principles of objectives be understood in the light of specific texts; and, at the same time, that specific texts be understood in the light of general objective principles.**

In summary, the argument that illiteracy is the cause of the commandment of sighting the crescent and that, with literacy, there is no need for sighting is probabilistic and introduces contradiction and inoperability into a clear, explicit and definitive meaning of a text that commands fasting only if the crescent is seen. **The logical and legal resolution is to understand the text on illiteracy in light of the definitive text and thereby produce a legal outcome that is holistic, harmonious and consistent.**

At this point, it is noteworthy to cite the opinion of a great ḥadīth scholar and jurist, Ibn Ḥajar al-‘Asqalānī, concerning the significance of the Prophetic statement, “We are an unlettered nation. We do not write nor count. The month is like this and like this....” Ibn Ḥajar noted: “The intent of ḥisāb here is that of the motion of celestial bodies.... **The verdict of fasting on the basis of sighting would continue despite the existence after them of those who would be familiar with this (computation).** Indeed, the apparent meaning of the above texts indicates, to begin with, the negation of any causal connection of the verdict (of the obligation to begin the fast) to computation.” (Ibn Ḥajar al-‘Asqalānī, *Fath al-Bārī*, published by Dār al-Fikr: 1992, Vol. 4, Ḥadīth 1913, p. 623). Ibn Ḥajar is simply saying here that **illiteracy is not an operative cause.**

*Analysis of argument four:*

4. *Sighting the moon is only a means to establish the month. Modern science can calculate the birth of the moon and the beginning of the month with accuracy (Paper, 23, 59-61). Moreover, we do not use actual sighting for other acts of worship (Paper, 21); and Rasūlullah (صلى الله عليه و سلم) did not physically sight the moon on the occasion of his month-long separation (إيلاء / إيلاء) from his wives (Paper, 37).*

First, **it is essential to understand the difference between the scientific precision in calculating the birth or conjunction of the moon and the speculative scientific calculations regarding visibility of the crescent.** The former are undisputed: science can calculate with accuracy and precision the birth of the moon. The latter case, determining moon sightability, is universally debated. Due to numerous natural and numerical factors, science cannot forecast when the crescent will be visible with certainty. That this area of forecasting is speculative is a fact conceded even by those that advance the argument for unconditional astronomical calculation: “Even the Muslim astronomers disagree between themselves about the true criterions of the actual

visibility because the visibility depends on many factors. These factors are not predictable or are not 100% sure (Statement, 3).”

Second, as mentioned in the first argument, the text on this issue – “Do not fast until you sight the crescent...” – uses the strongest, most unequivocal language that sighting and only sighting is the first means of ascertaining the beginning of the month. The text is explicit (*ṣarīḥ* / صريح) and definitive (*qaṭʿī* / قطعي) in its meaning (دلالة); the manner of deduction is directly from the text (*manṭūq* / منطوق). The *hilāl* / هلال, as mentioned earlier as well, is the visible crescent. And seeing (*ruʿyah* / رؤية) must be understood in its literal understanding unless it is impossible to do so. There can be no doubt whatsoever that the Lawgiver intended the physical sighting of the crescent. Text three is explicit in this intent. **To ignore that explicit intent, and instead connect the beginning of the month with the birth of the moon, is an unjustified violation of the law because it cannot be supported by textual analysis.** The controls inherent in Islamic law regarding the witnessing of the crescent – and the attendant social and spiritual benefits that accrue from a healthily managed process – would be organically better and of greater communal benefit than deferring the beginning of the month to a computational approach of sightability.

Third, the argument that we rely on astronomical processes and not physical sighting for acts of worship such as prayer and breaking the fast is not sound. It has been argued, for example, that the verse “Eat and drink until the white thread of dawn appears (*tabayyana* / تبين) distinct to you from its black thread” has not been applied “literally but in spirit by following the calculated timings” (Paper, 21). As discussed earlier, the text, “Do not fast until you sight the crescent...,” makes sighting of the crescent a clear, explicit condition for the beginning of Ramaḍān. There are no such textual conditions of sighting with reference to other acts of worship. **The Lawgiver did not say, “Do not perform the *maghrib* prayer until you see the sun setting.” Nor did He say, “Do not stop eating until**

**you see the rise of the star of dawn.”** Moreover, the word (*tabayyana* / تبين) is not synonymous to رأى, the verb “to see.” The absence of such textual explicitness regarding exclusivity opens the door to the possibility of other methods for the determination of times as long as they lead to the same level of certainty.

Fourth, and even weaker, is the argument that Rasūlullah (صلى الله عليه و سلم) did not sight the crescent on the occasion of his separation from his wives, but rather counted the days (Paper, 37). He returned to them after 29 days and, when asked about his month-long vow, he replied that “the month consists (sic) of 29 days.” It is deduced from this that Rasūlullah (صلى الله عليه و سلم) did not physically see the crescent and merely counted the days. A further argument is that the “ḥadīth does not say that it was cloudy that evening” (Paper, 37). In response, it must be noted that the translation of “*yakūnu* / يكون” as “consists” is incorrect. The verb “*yakūnu* / يكون” means “may consist” in this context, as other variances of the text show. (See, for example, the *Musnad of Imām Aḥmad ibn Ḥanbal*, edited by Samīr al-Majdhūb and published by al-Maktab al-Islāmī, ḥadīth # 5183, 24043 and 26056). And Rasūlullah (صلى الله عليه و سلم) was merely stating that he had fulfilled the vow as a month could consist of 29 days. Moreover, there is no textual indication that he began his separation at the first of the month or that he was determining the beginning of the next month. **The elapse of time was meant for mere duration and not a month-to-month observance – as the law of *ilā`* / إيلاء has not been connected by the Lawgiver to the sighting of the moon as in the case of fasting.**

In summary, it should be reiterated that the definitive and explicit ḥadīth on not beginning the fasting of Ramaḍān until the sighting of the crescent has been evidenced makes physical sighting a condition unlike other acts of worship that have no such condition. Through experience, the wisdom of the Lawgiver is evident. While astronomical calculations of both the birth of the moon and the

movement of the sun are precise, calculations regarding the sightability of the moon are variable and probable. Early scholars were fully aware of this fact. A selection of excerpts from the work of Ibn Taymiyyah's *Majmū' al-Fatāwā* (Kitāb al-Ṣawm, Risālatun fī al-Hilāl, Vol. 25, p. 131-132; 183-186; 189), reproduced in Appendix A, dispels a number of misunderstandings regarding the state of knowledge of early scholars. The excerpts elucidate that some early scholars did not unconditionally reject astrology; were fully aware of the distinction between astronomy and astrology; differentiated between the ability to determine the birth of the moon with precision and between the approximative and probabilistic ability to determine the sighting of the crescent; and that they possessed a far-sighted – even visionary – understanding of the factors (including the angular degrees employed by modern astronomers) that influenced the seeing of the crescent. The assertion that early scholars were uninformed about such matters is simply untrue.

*Analysis of argument five:*

5. *A number of scholars of old have argued in favor of accepting calculations “in part or totality” and the number of scholars inclined towards partial or total acceptance of astronomical calculations is increasing (Paper, 62-63).*

**First, it must be emphasized that the science of determining the birth of the moon was not unknown in classical times.** On the contrary, that science was well developed and relatively precise. The scholars that insisted on physical sighting are an overwhelming majority (Paper, 1-5). They did not reach their rulings unaware of the accuracy in determining the birth of the moon; they reached their verdict in view of the specific text, articulated earlier, that insists on the sighting of the moon as a condition for fasting.

**Second, the few classical scholars that permit astronomical calculation do not do so unreservedly but only under certain conditions** – when, for example, it is cloudy, in conformity with the texts; or to negate an impossible

claim of sightability. Ibn Surayj espouses the first view; al-Subkī, the second (Paper, 39, 51-54). Neither supported the view of the unconditional use of astronomical calculations in determining the month of Ramaḍān. Ibn Qutaybah also appears to support conditional calculation (Paper, 51) as, apparently, does al-Dāwūdī (Paper, 52). The views of other scholars appear less clear. Ibn `Abd al-Barr, for example, denies that Muṭarrif ibn `Abdullah subscribed to the use of conditional calculation; and Ibn Rushd relates that Muṭarrif's view is only in relation to when the moon is obscured (Paper, 51-52). Al-Khaṭṭābi is referred to but uncited (Paper, 51). And statements of Ibn Daqīq al-`Eid and al-Qarāfī regarding other scholars are reported but their statements are not clarified as to which scholars hold what position (Paper, 52). Ibn Daqīq al-`Eid himself only supported a conditional use of calculation (Paper, 57-58).

Third, twentieth century scholars that support the astronomical determination of the moon include Muṣṭafā al-Marāghī, Maḥmūd Shākir, Muṣṭafā al-Zarqā, `Ali al-Ṭanṭāwī and Sharaf al-Quḍā' (Paper, 40).

In summary, only five modern scholars were cited who support the astronomical determination of the moon. How many other twentieth century scholars do not? **Moreover not one single classical scholar supports the astronomical determination of the moon and a slim minority – four or five only – support calculation only to either verify sighting claims or in the advent of obscurity.**

*Analysis of argument six:*

6. *Muslims all over the world, especially in the West, suffer a great deal of hardship (mashaqqah / مشقة) due to physical sighting (Paper, 23). Additionally, physical sighting is a cause of disunity and discord (Statement, 1-2).*

The argument raised is an appeal to the objectives (*maqāṣid* / مقاصد) of Islamic law to ameliorate hardship (*mashaqqah* / مشقة). The hardships enlisted include waiting until midnight in anticipation of sighting and difficulties for students and those who work (Paper, 23). Scheduling and costing issues for ‘Eid might also be raised.

Firstly, **it must be understood that Islamic law does not aim to ameliorate every hardship but only excessive hardship that is regular and not rare.** For example, there is physical hardship in fasting and in performing the pilgrimage. There is also psychological hardship in denying the self prohibited pleasures. These hardships, for a healthy and mentally sound adult personality, are even necessary for his or her self-purification. It cannot in good conscience be claimed that remaining awake past midnight for one night a year constitutes excessive hardship, or even hardship, neither for students or those in the labor force. How many Muslims stay awake past midnight at least once a week watching television or socializing? Does this constitute excessive hardship? Indeed, the danger of this misapplication of the objectives of Islamic law is that it dampens respect for the true intent of the Lawgiver and emboldens those who employ a pick-and-choose method that subjects the letter and spirit of the law to their own preferences and subjectivities. It is at this point that costing and scheduling issues at ‘Eid become do-or-die events though the practical workaround issues – less glamorous perhaps, like two prayers in the same masjid – are always available. Even a cautious two-day reservation for a hall for ‘Eid prayers hardly qualifies as excessive hardship.

With regard to the second claim, **it is difficult to appreciate how unconditional astronomical calculation is going to lead to greater unity given, as mentioned previously, that it is a significant departure from centuries of scholarship and local tradition.** If anything, it will lead to increased disunity.

*Analysis of argument seven:*

7. *The sighting of the crescent is not an act of worship (ta'abbudī / تعبدي). It is simply a means to know the entry of the month of Ramaḍān (Paper, 61). Since astronomical calculation can accurately determine the birth of the new moon, we should use the birth of the moon as the standard to determine the beginning of Ramaḍān.*

It is first important to understand what is meant by designating an act as one that relates to worship (*ta'abbudī / تعبدي*) or not (*ghayr ta'abbudī / غير تعبدي*). Being (*ta'abbudī / تعبدي*) can have a general or specific meaning. As a general meaning, (*ta'abbudī / تعبدي*) would include every command or prohibition that is respected in compliance to the will of the Lawgiver. Specifically, however, it refers to a law whose effective cause cannot be understood rationally – that is, the intellect cannot perceive the necessary relationship between the attribute that led to the verdict and the verdict itself. The majority of scholars term this type of cause a *sabab / سبب*. For example, the sun passing its zenith is the cause for the obligation of the prayer of *ẓuhr*. The rational relationship between the sun passing its zenith and the entry of *ẓuhr* is not perceivable or rationalizable by the intellect. The cause remains the cause solely because it is designated as such by the Lawgiver.

This stands in distinction to a law whose relationship to its effective cause is understood by the intellect. Scholars term this an *'illah / علة*. The law is affected by the *'illah / علة*. Where the *'illah / علة* is present, the law is operable; where the *'illah / علة* is absent, the law is suspended. The law in this case would be non-*ta'abbudī / غير تعبدي* – it would change with the presence or absence of the *'illah / علة*. Every *'illah / علة* is a *sabab / سبب* but not every *sabab / سبب* is an *'illah / علة*.

How is a verdict (*ḥukm* / حكم) understood to be one that is *ta'abbudī* / تعبدی or not (*ghayr ta'abbudī* / غير تعبدی)? A verdict is understood to be *ta'abbudī* / تعبدی either by an explicit designation by the Lawgiver in the primary sources of the Qur`ān or Sunnah, or through *ijtihād*. When drawing directly or inferring from a text that a matter has a rationalizable cause and is not *ta'abbudī* / تعبدی, due care must be taken to ensure that texts, especially texts whose meanings are explicit, are not rendered inoperative. Quite simply, we cannot establish a cause that would render the spirit and the intent of the Lawgiver inoperative or contradictory. As mentioned earlier, the objectives of the law (*maqāṣid* / مقاصد) must be applied in light of specific texts; and vice versa. Neither may override the other.

We may now draw a number of conclusions. First, if the sighting of the crescent is *ta'abbudī* / تعبدی, and therefore not rationalizable, there is no issue to be addressed. Ramaḍān may only begin with the sighting of the crescent. However, if we assume that the sighting of the crescent is understood to be non-*ta'abbudī* / غير تعبدی – with the cause of the sighting of the moon being the illiteracy of the early Muslim community – there will be, as discussed earlier, many serious legal errors leading to inconsistencies.

The vast majority of scholars, many of whom were very competent in astronomical computation, held that the sighting of the crescent is *ta'abbudī* / تعبدی and is a non-rationalizable cause, or *sabab* / سبب, for fasting (See, for example, *ʿIlm Usūl al-Fiqh* by ʿAbdul Wahhāb Khallāf, 12<sup>th</sup> ed, published by Dār al-Qalam 1978, pg. 68-68). They did so on the basis that **the sighting (*ru`yah* / رؤية) of the crescent moon is a declaratory law, *ḥukm waḍʿī* / حکم وضعی, that is assigned by the Lawgiver to determine the beginning of Ramaḍān.** The sighting of the crescent as a cause for fasting is not a *ḥukm taklīfī* / حکم تکلیفی which may change depending on the existence or non-existence of an effective cause or *ʿillah* / علة. **We do not investigate nor modify the cause itself,** which

is a declaratory law, by searching for the cause of a cause. Pursuing such a course would lead to a process without end. The sighting of the crescent simply does not open itself up to an examination of cause. The Lawgiver permits no authority to change the connection between the sighting of the crescent and the beginning of Ramaḍān. Had the Lawgiver wanted, He could have ordered the beginning of Ramaḍān to be immediately after the crescent of Sha'bān disappears or even assigned a time period after Sha'bān ended. He, be He exalted, did neither. He assigned the beginning of Ramaḍān specifically to the sighting of the crescent. **And as the entry of Ramaḍān is the sabab / سبب for the beginning of fasting, sighting the crescent is the sabab / سبب for the entry of Ramaḍān.** Both are a declaratory law (*ḥukm waḍ'ī* / حكم وضعي) assigned by the Lawgiver. Just as one cannot re-assign the month of fasting to any other part of the year due to the hardships of fasting in the summer, for example, one may not substitute the sighting of the crescent with any other means to indicate the entry of the month of Ramaḍān.

Similarly, the entry time for Fajr is the exact time assigned by the Lawgiver. No Muslim would propose that the prayer of Fajr be moved to after sunrise. The cause for the entry of Fajr is a *ḥukm waḍ'ī* / حكم وضعي and is therefore **not amenable to change even though the calculation of the time for sunrise is done with greater precision and sunrise is a reference for the start of a new day**; and even though the demands of employment in a post-industrial society differ markedly from those in an agrarian society where people rose much earlier to begin their day. And although the prayer of Fajr in the summer months may impose some hardship, consideration of such hardship cannot justify, as mentioned earlier, any change in the assigned cause (sabab / سبب) for the entry of Fajr. **Re-assigning the beginning of fasting Ramaḍān to the birth of the moon instead of its sighting is tampering with a declaratory law, a realm beyond the authority of even a mujtahid.**

## Conclusion

A dispassionate legal analysis of the relevant texts on sighting the crescent produces at least four significant conclusions: it confirms the true intent of the Lawgiver in a systematic, holistic and harmonious manner; it vindicates the received opinions – an overwhelming majority – of over 1400 years of Islamic scholarship; it provides a natural, sacred and communal beginning to a month of natural, sacred and communal return to God through the checks and balances of sighting the crescent over a mechanized and currently probabilistic computational science of crescent sightability; and it preserves both the letter and spirit of the law.

***Allāh knows best.***

***May Allāh shower His most beloved Rasūl (صلى الله عليه و سلم) – our only way to Him – with the purest of blessings. And may He guide us all, through His most beloved, to what is most beloved to Him.***

## APPENDIX ‘A’

The following are excerpts from Ibn Taymiyyah’s *Majmū‘ al-Fatāwā*, Kitāb al-Şawm, Risālatun fī al-Hilāl, Vol. 25, pp. 131-132, 183-186, and 189.

“And amongst them are those that do not accept the statement of an astrologer, neither in subtle nor obvious matters. And yet in their hearts, there is an unsettling feeling and a strong doubt due to their trust in him on one hand while the sharī‘ah did not consider that (the computational approach) on the other hand. In particular, (this would be the case) if they had some knowledge concerning calculation relating to the sun and the moon, (such as) their conjunction, the degrees of separation between them, the cause of: the appearance of the new crescent moon in the sky, the occurrence of the full moon, the veiling (of the moon before it reappears in the sky), the solar eclipse, and the lunar eclipse. Consequently, such people would extend their (satisfactory) verdict for calculation – in such matters as mentioned above – to the untrue and ignorant statements pertaining to the sighting of the crescent. Then, on the other hand, those who provide accurate information in matters of computation, the form and shape of celestial bodies and orbits, and their motions, are sometimes opposed by some of the ignorant and unlettered people or even by scholars belonging to our faith. They do that on account of having observed that they (those individuals) had disobeyed religious instructions by applying computation in the matters of sighting or on account that they held the belief that stars influenced (events of life on earth) – this being prohibited in religion – (and this) led them to refute all of what they claimed; they would not distinguish between the truth (they express) based on textual evidence and reason and between falsehood which conflicts with textual evidence and with reason....” (pp. 131-132)

“...Know that all the experts of calculation agree that it is not possible to precisely determine seeing by calculation, in the sense that it will not be possible to definitively establish in an exact and universal manner that it (the crescent) will be seen, or that it will not be seen. Instead, (the prediction of sighting) may be correct sometimes and it is not possible at other times. Consequently, those individuals who studied carefully the discipline (of astronomy) who were from nations like the Romans, the Persians and the Arabs; and other individuals like Ptolemy – who was considered of the foremost among them – and those who came after them – before the advent of Islam and thereafter – did not ascribe to it (calculation of the hilāl) in the matter of seeing, even one letter; nor did they define it (computationally) as they defined conjunction...because this (seeing) cannot be defined with precision....”

“What shows the impossibility of defining that (actual seeing of the hilāl) with precision is the fact that the one who calculates is able to identify with exactness such phenomena as the motions of both the sun and the moon, the time at which they approach each other closely, the orbit in which that occurs in the position of the sky above a specific position on earth, whether this joining (of the sun and the moon) happens during the night or day, and that this takes place after the veiling and before the appearance again of the crescent moon in the sky.... And of the domain of expertise of computation is the veiling and the time of the occurrence of the full moon.... This indeed can be precisely defined by computation.”

“As to the ihlāl (the first appearance in the sky of the crescent moon), they do not have any precise computational method for it, because there is no known computational method to define it precisely, as they have in the case of the time of the solar and lunar eclipses.... Therefore, the knowledge of solar and lunar eclipses for those who have accurate computational methods is (as conclusive as) the knowledge that anyone has concerning the 31<sup>st</sup> night of a month that the crescent moon will be visible; the doubt occurs only pertaining to the 30<sup>th</sup> day. I

say, therefore, that if the computational method is correct, it will enable the one who calculates to merely say, for instance, that the two disks (sun and moon) have joined together at this particular hour and that at sunset, the moon would have separated, for example, by 10 degrees, or less or more.... This is the extent of his knowledge, namely to determine the angular distance between them at a particular time and in a particular location. This is what calculation defines with precision. As to the actual seeing (of the crescent) or not, this is a matter of physically sensing a natural phenomenon and not a matter of mathematical calculation (only). The most he can say (is) that, **statistically, (we have observed that) if it were at such and such angular degree (from the sun), it will definitively be seen or it will not be definitively seen. This is, however, ignorance and error, for this (to see or not to see) does not obey one, single, unalterable, fixed law. Instead, (what is factual is that) if its angular distance were, for example 20 degrees, it will be seen as long as nothing obstructs vision. And if it were at, say, 1 degree, in this case, it will not be seen. As to (for instance, if it were at an angular distance of) around 10 degrees then, in this case, the answer would be different depending on the parameters affecting sighting.**” [Emphasis added]

Ibn Taymiyyah then defines such parameters in a manner that is remarkably similar to the manner employed by modern day astronomers who study this issue. He mentions five such parameters:

1. The sharpness, or lack thereof, of the vision of the observer;
2. The number of observers;
3. The position of the observers;
4. The time of observation; and
5. The weather conditions.

He concludes: **“And if the judgment on sightability depends – among other factors – on those causes, none of which is included in the calculations of those that perform astronomical calculations, then how is it possible to report with a sweeping generalization that it is not possible for anyone to**

**see it, who claimed to have seen it, at seven or eight degrees, or nine; or how is it possible to report with certitude that it will be seen at nine or ten degrees, for example** [Emphasis added]. Consequently, we find them disputing concerning the arc of (actual) vision: how high it is (above the horizon). From them are those who accept nine and half, and from them....” (pp. 183-186, and 189)