# Moon sighting – a contemporary problem facing Islamic society and the way out according to Qur'an and Sunnah

In the name of Allah The Beneficent The Most Merciful. May His infinite salutations and benedictions be showered upon our master Muhammad (SAW), his households and companions.

Asslamu alaikum.

Wa billahi tawfeeq.

Two calendar systems were used by humanity in counting days and tracing history, one uses the Sun and the other uses the Moon. The Holy Qur'an told us about these two calendars in *Suratul Rahman* where Allah said:

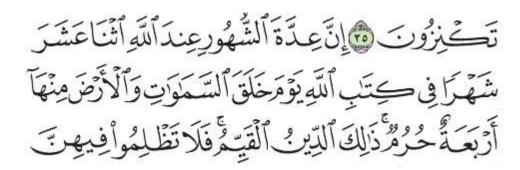


Suratul Rahman verse 5

# Meaning The sun and the moon follow course computed.

Man computes the course of Sun in a calendar known as Solar calendar an example is the Gregorian calendar which have January to December as months and the way the days are shared to each day is purely scientific due to the Sun course and because it is not the calendar we are interested in talking about we will not go to detail to discuss the sharing of 28, 29, 30 and 31 days to the months.

Man equally computes the Moon course in another calendar known as Lunar calendar example is Islamic calendar which starts from Muharram to Dhul Hijjah as months. These months or this type of lunar months is declared Islamic calendar to be used in all worships in *suratul Tawbah* verse 36 where Allah said:



Then the sharing of 29 and 30 days to the months was done by the prophet (SAW) where he said:

#### Hadith A

It was narrated from Ibn 'Umar (may Allaah be pleased with him) that the Prophet (peace and blessings of Allaah be upon him) said: "We are an unlettered nation, we do not write or calculate. The month is such-and-such or such-and-such — meaning sometimes it is twenty-nine and sometimes it is thirty." (Narrated by al-Bukhaari, 1814; Muslim, 1080)

This hadith I will refer it to hadith A so that I can refer to it in my subsequent discussion, because it is understanding this hadith that will solve about 70% of this problem.

The prophet (SAW) counts his handful thrice meaning 30 days and counts his handful twice then on the third holds nine fingers meaning 29

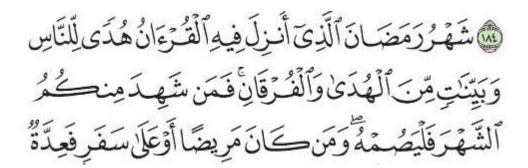
days. This is how the days are assigned to the Islamic months some 29 and some 30 days. This is itself scientific as you will see later, but the prophet(SAW) did not want to confuse his companions with lengthy scientific theories having known that they are illiterate of scientific knowledge (Ummatun Ummiyyatun) he illustrated to them how they will understand and yet when our time comes, the era of science we will still understand him(SAW). The prophet(SAW)avoid going to detail in breaking which month will hold 29 and which will hold 30 days, because shari'a is placed on simple instrument that is available to all. For instance, the cloth to cover dead bodies is made simply white, if any colour is given it will be difficult for certain people somewhere to obtain such colour so a simple white is used. In ablution water is almost together with man in all time and is used as object for ablution, however some time it may be scarce so another thing more simpler and common to it takes over which is Earth (soil) and can be used for sand ablution in such case. In timing of prayer, a simple and common object which is almost everywhere – the sun is used with it zuhr, Asr and Maghrib time are fixed. Since it will not be available in the night something more simpler and common to it - the heaven is used for timing of Fajr and Esha prayer. In jamra Throwing the Devil in Mecca) Gold that is difficult and not common is not used rather pebbles that are common and simple are used. In adhan (call to prayer) Sirens or bells or alarms which are not common

in all places are not used but simple and common object – human voice is used. This is how objects are chosen for use in the context of shari'a. so the prophet(SAW) used a criteria of sighting the crescent on day of conjunction(The day it manifests) to end a month with 29 days and not sighting it to makes the month 30 days. This is contained in the hadith:

## Hadith B

Abu Hurayrah narrates that Allah's Messenger (SAW) said: Observe fast on sighting it (the moon) and break (fast) on sighting it (the new moon). If sky is cloudy for you, then complete the number (of thirty). (Sahih Muslim, 2379)

Hadith derived its power from verse 185 of *suratul Baqara* where Allah said:



Meaning: ....Whoever witnesses the crescent of the month, he must fast the month ....

There are two verbs used by hadith B (there are other similar Ahadith to B, but using hadith B suffices for others) and verse 185 of *suratul* Bagara:

- 1. In hadith B *ruúyatul Hilal* (sighting the crescent moon) is used to have the current month ends with 29 days if it be Sha'aban fasting commences the next day, if it be Ramadan breaking fast with Eid celebration commences the next day. Or inability to sight the crescent extends current month to go to 30 days, if it be Sha'aban then fasting comes up after Sha'aban finished with 30 days, if it is Ramadan, then fasting should be completed to 30 days before observing Eid.
- 2. In verse 185 of suratul Baqara the verb is *shahida* (Witnessing). If Allah uses the verb *ru'uyatil Hilal* then the crescent must be sighted at all course and deadlock will be for blind ones, rather He uses *shahida* (witnessing) To witness new month starts from the day of conjunction zero hours, by referring to the hadith we understand *shahida* is only valid in the day of conjunction if the crescent is sighted (If the month is destined to ends in 29 days) otherwise it is not valid in that day. If *shahida* (witnessing) is not valid on the day of conjunction then by hadith B its validity automatically starts on the third day of conjunction after the preceding months dies up in 30 days. This is clear. *Shahida* is equally used because is not everyone that is expected to go and look for crescent, it is *fard kifaya*. So, those who have not seen it

including blind ones, as others sighted it, they too have witnessed the month and should fast.

The next hadith I want us to add to our discussion is:

#### **Hadith C**

Ahmed narrates from Muslamah who narrates from Ya'qub bn. Ibrahim al Asqalani who narrates form Yusaf bn. Muhammad al Faryaabi who narrates from Sufyaan bn. 'Uyayna who narrates form Al-Zuhri who narrates from Anas bn. Malik that the Prophet (pbuh) said: Seek knowledge even you have to go to China.

Sheikh Hassan Cisse(RA) while commenting on this hadith in his book Sincere Advice explains that at the time of the prophet(SAW) knowledge of religion is in Medina and if it is this same religious knowledge the prophet(SAW) is referring to in hadith C, he wouldn't mention China, rather Medina. Having mentioned China he (SAW) is referring to the knowledge not found in Medina i.e. Mathematics and other sciences, with at that time it is abundance in China and scarce in Medina. I know some hadith students have discovered weakness in the *isnad* of the hadith (chain of narrators) and labelled the hadith as fair(*Hasan*) while some even consider it as fabricated (*Da'if*), but none of such students attack *Matn* (content) of the hadith except very few that look at the instruction to go far to China is it a burden and not likely instruction from

prophet(SAW). China as mentioned in the hadith does not necessarily mean to go to China rather learn sciences from West.

In Hadith A, all commentators agreed that "We" as used by prophet (SAW) is referring to Arab race which at that time are not good in mathematics, Astronomy and other sciences to understand issue of moon better. Looking at the hadith, we can bring out the followings that:

- 1. There are other knowledge (i.e. mathematics, astronomy and other sciences) that have explanations in details of the moon and such knowledge is not available with the Arabs at the time of the prophet (SAW).
- 2. These knowledge should not tamper with the provision of Shari'a that minimum days of the month is 29 and maximum 30, and these are to be determined by moon sighting and nothing else.
- 3. Individual judgment on the moon sighting is not accepted because of the plural *idha ra'aytum* (if you in plural see) and joined with another hadith of the prophet(SAW) where he(SAW) said if you become two, appoint (one to be) a leader. There should be a leader to supervise the moon sighting exercises. In Nigeria, Supreme Council of Islamic Affairs under the chairmanship of the Sultan is such leader.
- 4. Sighting is done with naked eyes ONLY, throughout the life of prophet(SAW) is naked eyes that is used, the guided caliphs as

well and in fact till-date naked eyes is the only object accepted for sighting and any other object is not allowed.

Before we venture into the other knowledge available to ummatun ghayra ummiyyatun (Not the Arabs of the time of the prophet SAW), let me explain the place of science in religion. Science cannot take the place of fundamental objects where Shari'a is based, but can be used to cover the weakness of such objects due to many reasons that may arise. I will give some instances and before that I remembered my discussion with group of young undergraduate students at the department of Arabic and Islamic studies in Ahmadu Bello University, Zaria in Nigeria. I met the young men having a polite argument on time of Asr prayer. One group are using clock as source of their argument (in other words scientific instrument as object) the other is using the normal measurement of shadow of object equalling its height. I listened very well to their argument and when I saw all parties have exhausted their reasons, I interfered and said, both parties are right, but based on the circumstances arising. I said, Islam allows the use of both objects for timing Asr. The fundamental and undisputed, most reliable and original is measurement of shadows. Anyone who uses this is most of times correct and will never be wrong and it is the default object that should be used by any Islamic society. I further said, clock as a scientific object is there to help the fundamental object where it fails and is therefore referred to as auxiliary object. I asked them, do they know

there certain towns in the world where one can spend several days without seeing sun? I listed some of these towns to them and further asked them how can Muslims measure time of Asr prayer in such towns using the fundamental object? They both nodded their heads meaning it is not possible, I then remarked there Islam agrees to the use of the auxiliary object which is clock. The people will simply use the hour when Asr time was done at the days when there is sun or the clock of neighbouring towns. And the young men were satisfied and left. Nowadays, we even have another auxiliary object better than the clock, a formula to calculate when the sun will reach a stage that shadows of all objects becomes equal to their heights in each town and place. This formula is used in laptops, smart phones and even radio stations to automatically pronounce adhan (call to prayer) not only for Asr prayer, but for the entire five daily prayers. Science provides use of auxiliary objects that can assist the fundamental ones. I will cite some common instances where fundamental objects are being assisted by auxiliary ones:

1. A couple, husband, wife and a child at two years of age came to a town and settled. They are Msulim family but nobody knows from where they come or where their relations can be found. While sitting in the town, the husband and the wife die in ghastly car accident. The Muslim society there does not know whether the child is the begotten child of the father or the mother or both, since

no record established that. And cannot know whether the wealth the deceased left will be inherited by the child or not. Here the fundamental object to use record of birth to trace the parent of child, fails, but science provides auxiliary which is DNA test conducted on the three will show whether child can inherit the deceased or not since it can show whether is a begotten child or not. And the auxiliary object can be used in place of fundamental. Nevertheless, it cannot be used to establish a wife betrayal of husband in a born child.

- 2. Muslim Prisoner locked is maxim prison in sealed room, no single ray of sun can be seen and all warders are unbelievers and he will not be allowed to come out and measure prayer time, but was given a laptop. Such person can look for prayer time of the place the prison is located from the internet which is auxiliary object.
- 3. A Muslim wants to give out *zakatil fitr* but lives in a town where *mudd Al-Naby* cannot be found, then such person can go to internet and find the equivalent weight of *mudd Al-Naby* in kilogram and measures the grains on scale and give it out. Here too auxiliary takes over fundamental.
- 4. In present time science touches many fundamental objects due to Corona virus pandemic, for instance in congregation prayer, rows are normally formed shoulder to shoulder, but today science places

- social distance in the rows, some places *Jumma'at* prayer is replaced with Zuhr. Shaking of hands totally forbidden.
- 5. In *Sa'ayi* fundamental object is that pilgrims should trek on the natural body of mount Safa and Marwa, climbing them. Today, science erected building with rails for disable to walk between the top of two mountains and not climbing them, auxiliary replaced fundamental.
- 6. A father and his son were in extensive care unit, both Muslims, they were left in the unit when some hours later they were found dead. The question is who dies first so as to know who will inherit the other. The fundamental object is to get human who will confirm who dies first and there is none. Shari'a will then request for record from electrocardiogram (ECG) **machine**. The machine record among the two whose heart beat stops first. Here science is used in place of the fundamental too.
- 7. Two people transact loan in an office with CCTV camera and recorded it on paper, the two died only informing their heirs about the loan but did not disclose the amount, the paper was lost. The paper is the fundamental object Shari'a required but it is lost. Shari'as will then request for the footage of the CCTV camera of that day and watch the amount discussed, here too science saved the day.

Seeking aid from scientists where fundamental object of Shari'a fails has a base in verse 43 of *suratul Nahl* where Allah said:

The provision of the verse mandates us to ask people of knowledge on anything we don't know.

Having seen these, we will examine the scientific details about moons that will help us understand hadith A and even B better.

#### The moon

- 1. The old moon took 29.5306 days to cycle to a new moon, which is equivalent to 29 days and 12 hours and some minutes and seconds as well. Roughly 29 ½ days.
- 2. To go with the fundamental provision of Shari'a of 29 days and 30 days. when Muharram takes 29 days, its ½ day go to Safar and adds to its 29 ½ to become 30, this continues until Dhul Hijjah is met. In this example Muharram is said to be in *Nuqsa* state (state of losing its 12 hours to next month) and Safar is in a state of having additional 12 hours. The minutes and seconds sums up to a day after some period of years and that give rise to leap year where Muharram or one of the 29 days months becomes 30.

- 3. Crescent is usually seen on the 29<sup>th</sup> day in the early sunset period usually 6 pm or some minutes after in many cases here in Nigeria.
- 4. Before now little is known about the visibility of the crescent, hadith only had it that there will be a crescent that will be visible and there is one that may not be visible (Refer to hadith B). Today many factors are astronomically studied that can be responsible for a crescent being visible or not. This is an auxiliary object that gives one clue on whether local sighting may be credible or not. Base on these factors, conjunctions are scanned and pre-determined whether it can be visible to naked eyes or not. If it will be clearly visible slightest claim for sighting can be accepted and if not visible by naked eyes, then claim of sighting should be subjected to thorough investigation. See image 1, it is the crescent of Shawwal 1441 which appears on Friday 22<sup>nd</sup> May 2020 by 6 PM Nigerian time, it is practically invisible to naked eyes in almost everywhere in the globe and possibly all claims of local sighting are not credible,
- 5. Even if crescent is not visible to naked eyes, it can be seen using telescope and other vision aids, but this cannot and is never taken as equal to sighting with naked eye.
- 6. Visibility of crescent gradually improves and so is its size in house until at 48 hours it will be visible to naked eyes anywhere in the

- world (that is new moon after 30 days moon). Refer it is Shawwal 1441 crescent on Saturday 23<sup>rd</sup> May 2020 clearly visible except where there is bad weather.
- 7. Factors that causes crescent not to be visible varies, but broadly categorized into natural and artificial factors and both are unnecessarily increasing nowadays I will explain.
- 8. Look at the sub-solar and sub-Earth longitude and latitude where the crescent appears in both image 1 and 2, you can imaging how erratic local moon sighting will be if they look at different directions to the actual position of the crescent.
- 9. Visibility of the moon at any phase relies heavily on the surface of the moon receiving sun rays and reflecting it to the Earth. If there is reflection then it is visible on Earth otherwise it will not be visible. If the reflection is so strong even in day time the moon can be seen from Earth while if there is no reflection even in the night, the moon cannot be seen.
- 10.Usually, for the **moon to be visible**, it has to be at least 18 hours old and **should** have 12° elongation and altitude of 10° at the time of sunset. First **crescent** can not be **visible** before the birth of a **new moon**.

11. The time when crescent can be seen quickly – short time after the new moon is March for northern hemisphere and September for Southern hemisphere

Image 1



Time Friday, May 22, 2020, 17:00 UT

**Phase** 0.0% (29d 14h 34m)

**Diameter** 1801.5 arcseconds

**Distance** 397842 km (31.22 Earth diameters)

J2000 Right Ascension, Declination 3h 59m 27s, 18° 5' 25"

# Subsolar Longitude, Latitude 176.342°, -0.765° Sub-Earth Longitude, Latitude -3.909°, 3.189° Position Angle 349.824°

Source NASA, 2020

# Image 2



Time Saturday, May 23, 2020, 17:00 UT

**Phase** 1.0% (0d 23h 21m) **Diameter** 1815.7 arcseconds

Distance 394729 km (30.98 Earth diameters)

J2000 Right Ascension, Declination 4h 50m 43s, 21° 6' 52"
Subsolar Longitude, Latitude 164.096°, -0.743°
Sub-Earth Longitude, Latitude -4.704°, 1.827°

Position Angle 354.678

Source NASA, 2020

# Image 3

The crescent image under high resolution (contrary to image 1 which is natural as seen by naked eyes)



Source NASA, 2020

# **Image 4**

The crescent image under high resolution (contrary to image 2 which is natural as seen by naked eyes)



Source NASA, 2020

Image 5

See how crescent looks like on 29<sup>th</sup> day when it is visible. Notice it is tiny dotted images in arc that can be seen by naked eye.



**Image 6**New moon image on 29<sup>th</sup> day when it is visible



Image 7

Then see a satellite appearing



Image 8

Another image of satellite in the sky. Notice how it looks like full moon



Image 9

Another image of satellite notice how it can easily be confused for crescent if observer has no knowledge of moon



#### **Calendars**

Islamic Calendars are drafted based on these findings, however as calendar days are rolling at some point it will have an error of  $\pm 2$  days. Any designed calendar which error with the fundamental moon sighting principles goes to an error greater than this is wrong in design. And any good calendar will bounce back and comes equal with the fundamental as times goes on.

The rulings on Designed Islamic calendars are not substitute to fundamental moon sighting.

# Ramadan will always be 29 or 30 days

To answer this question, we will first look into history, at the lifetime of the prophet (SAW) did he always have Ramadan as 29 or as 30 days? The answer is it is always 29 days. Sheikh Tahir Uthman Bauchi (RA) stated that much of the prophet (SAW) fasting were 29 days. However, nowadays most of our fasting may likely be 30 because factors that make crescent invisibility are increasing day by day due to the followings:

- 1. **Massive air pollution**:- the green house gases emitted daily from combustion engines of cars, machines, generators and burning and cooking with firewood's, particularly from industries create particles that moves and settle in the sky for long. This diminishes the visibility of crescent, particularly in industrial cities.
- 2. **Global warming:** there is an unprecedented changes in climate due to green house gases. The weather of towns and cities that have been constant for hundred years now changes bringing out fluctuations and this may create bad weather not favourable to sighting crescent.
- 3. **Satellites occupying our spaces:** satellites are artificial moon created by man for several purposes either civil or military. Satellites which orbit the Earth the same way does moon, may sometimes hinder visibility this may occur due to large number launched each day.
- 4. **Flying objects on rampant**:- flying objects particularly drones and unmanned aircrafts can move at high altitudes and may be responsible for diminishing visibility at some region of Earth

5. **Nuclear activities**: - this is another factor, particularly radiations and mushrooms from blast. This even though very rare, but is a factor capable of impending invisibility of crescent.

These are artificial factors that join up with the natural and each year, if care is not taken to make sighting almost impossible or erratic.

## Criticism against local claims of sighting of crescent

The local moon sighting done by most local populace at this period where crescent visibility is diminishing due to several factors as discussed earlier, are mostly error-prone due to the following reasons:

1. Most of the local populace are ignorant of many vital astronomical facts that should be considered when looking for the crescent. I remembered meeting one and I asked him to which directions did he looked upon for the crescent. He could not direct the precise location, but claimed he has been looking for the moon for several years, personally. Three questions will tell you about the credibility of the sighting. a) Which direction the crescent was sited? Because there is valid direction it can be found all other directions are invalid. b) What is the time of sighting? Because the visibility of the crescent on the first day has period of time before it will disappear and this varies with the location of sighting. C) How does the crescent look like? The shape of the crescent on the first day is unique, familiar to only those who know it.

- 2. Availability of satellites: satellites are artificial moons created by science. Hundreds of satellites roamed about our space the same way moon does, in fact satellite are built based on knowledge of real moon. They became visible and invisible at different times in the month. By Allah most of local claims of moon sighting today are actually sighting of satellites (artificial moon).
- 3. Absence of genuine process of authenticating the local claim of moon sighting. In Nigeria the way of authenticating is a blind process, a sighting reported to ward head, he to district head and finally confirmation by Emir who telephone the chairman of NSCIA and that is all. This process stands even when from the one who claim sighting, ward head, district head and the Emir know very little about moon. In all, the process is vulnerable to errors and cannot filter out error.
- 4. There is always getting tired of fasting when people reach 29<sup>th</sup> day and an eagerness to stop fasting syndrome infects most people and they become bent to accepting 29 even with claim that is not credible. People actually forget the fasting can be 29 or 30.
- 5. Diverse claim of authority: many individuals claim on themselves
  Islamic authority that have a say in moon sighting and works
  independently on their moon sighting claims.

- 6. Exercise of moon sighting was done only on two occasions by most countries, on Sha'aban to signal commencement of Fasting and on Ramadan to signal the end of fasting. This is not how it should be done. Moon sighting is supposed to be done on monthly basis and this will help in reducing the errors when it comes to the two most important ones.
- 7. Many planetary bodies may appear like crescent and confusing observer making claims that are not credible. Like in Hejaz, its Supreme Court which is the authority on moon sighting issue, made claim of seeing crescent for Shawwal on 29<sup>th</sup> day of Ramadan went ahead and declared Eid next day, later the object was confirmed to be Saturn and not moon. The authority in Hejaz apologised for the error.

#### Conclusion

- 1. Most of the claims for moon sighting in many countries may likely be erratic and not credible, reason are what was sighted may be another planetary body like Saturn or an artificial moon (Satelites).
- 2. Whether crescent will be visible can be known through science and where it will be visible in which region on Earth it will be visible can be know before the manifesting of the crescent. This vital knowledge should be used to determine credible claims and those that are not credible.

- 3. Sighting moon with any instrument not naked eyes cannot be taken in the light of Shari'a, but it can however be used to refute and authenticate claims of sighting of moon with naked eyes.
- 4. Science can be used to assist shari'a in many cases, in moon sighting its strongest use is in authenticating and refuting claims of sighting of moon with the naked eyes.
- 5. There are lapses in local moon sighting in many countries and there is the strongest need to correct them.
- 6. There is no room for individuals or small group of persons to assume on themselves authority to accept or refute moon sighting except it is a national body set by the state or the Muslim Ummat.
- 7. Moon sighting exercise should be seen as a very serious issues that should not be taken by anyone except after having special training on it.
- 8. Sincere efforts should be made to make unity of ummat in accepting moon sighting at national level paving way for global one.
- 9. Muslim scientists (astronomers) and scholars should regularly sit together in workshops and seminars to brainstorm on contemporary challenges facing moon sighting.

# The way out

Analysing the whole problem will cause a serious concern to every Muslim, I remember a non Muslim asking why are Muslims not united on moon sighting, a question that should bother us sincerely.

My humble recommendations to the authorities e.g. NSCIA and individuals are:

- 1. Incorporating scientific instruments in authenticating credible and not credible moon sighting, in the following manner:
  - a. Getting visibility information at hand before looking for moon, if it is going to be visible, then stringent verification process should be adopted on each claim in order to fish out claim that are not credible.
  - b. Get the time, location and even telescopic picture of crescent then use this in the verification of claims.
  - c. Liaise with department of astronomy of universities at all local centre for verification of claim and all claims shall be routed through it for verification and authentication.
- 2. Meting of punishment of flogging to anyone who claimed sighting of crescent and later it was proved his claim is not credible. This is because he told lie actually and flogging is the punishment of lie under Shari'a this will reduce rising case of claims that are not credible.

- 3. The membership of moon sighting authorities should be widen to include different Muslim group in order to precipitate allegiance from such group.
- 4. Countries should look for ways for interchange of information sharing regarding moon sighting with the hope of bringing about unification on this matter.
- 5. Scholars should sensitize the *ummat* that Ramadan fasting is not necessary that it should be 29, evidently it can be 30 when conditions warrants.
- 6. *Islamiyya* schools and *Madrassa* should include in their curricula courses on moon sighting.
- 7. Government should have documentaries on moon sighting aired on television and particularly radio station to enlighten the Muslim public on this sensitive matter.
- 8. After each Ramadan, moon sighting authorities should conduct a retreat and invite memorandum from the public on lapses in the moon sighting of the preceding Ramadan and Sha'aban.
- 9. Moon sighting should be regulated to be on monthly basis as required, not only on Sha'aban and Ramadan, rather on all the twelve months. Hejaz through its Supreme Court used to do this, which is commendable.

# **Humble Summary**

I humbly summarises this article with the following:

# If you see the crescent(with your naked eye) fast, and when you see it break fast

This is Shariá part of moon sighting supervises by Islamic scholars. The second part

# Have you actually see a moon or something else

This is scientific part of moon sighting supervises by scientists.

Wa billahi Tawfeeq wallahu Aálam.

Abubakar Muhammad

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