AHMAD GHAZALI'S THOUGHTS IN THE BOOK OF *ANFA' AL-WASĪLAH* ON DETERMINING *'AṢR* TIME PRAYER

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Abstract

Ḥanafī's opinion differs from that of Al-Shāfi'ī in determining the entry of the time for the 'Aṣr prayer and the time for the Isha prayer. These two different determinations can be easily identified using the contextual method (calculation). The data needed in calculation is the high value of the Sun, so the thought of Ahmad Ghazali, an astronomer from Madura, explained about the height of the Sun based on two schools of thought. This provides a treasure of knowledge to someone in determining the entry of prayer times based on madhhab, just by looking at the clock. The type of method used in this study is qualitative field research with a descriptive approach, the aim is to describe Ahmad Ghazali's thoughts and to analyze in the field the given method. The results of the *Anfa' al-Wasīlah* calculation with the addition of 1 in the *irtifā'* formula is in accordance with the opinion of Al-Shāfi'ī, and an additional 2 in the *irtifā'* formula according to the opinion of Ḥanafī, while from Ahmad Ghazali's opinion it states that the two early determinations of the time for the *'Aṣr* prayer This is true, but it is more appropriate to use the *'Aṣr Awwal* time, because the *'Aṣr Awwal* opinion is supported by a number of scholars and strong arguments.

Keywords: *'Aṣr Awwal*; *'Aṣr Thānī*; Sun Altitude

Abstrak

Ḥanafī berbeda pendapat dengan Al-Shāfi'ī dalam menentukan masuknya awal waktu salat Asar dan waktu salat Isya. Dua penentuan yang berbeda ini dapat diketahui dengan mudah menggunakan metode kontekstual (*ḥisāb*). Data yang dibutuhkan dalam hisab yaitu nilai tinggi matahari, sehingga muncullah pemikiran Ahmad Ghazali menjelaskan tentang tinggi matahari berdasarkan dua pendapat madzhab. Hal ini memberikan khazanah ilmu pengetahuan kepada seseorang dalam menentukan masuknya waktu salat berdasarkan madzhab, cukup dengan melihat jam. Jenis metode yang digunakan dalam penelitian ini yaitu deskriptif-kualitatif dengan data lapangan yaitu mendeskripsikan pemikiran Ahmad Ghazali dan menganalisis secara lapangan terhadap metode yang diberikan. Hasil dari perhitungan *Anfa' al-Wasīlah* dengan tambahan 1 dalam rumus *irtifā'* sesuai dengan pendapat Al-Shāfi'ī dan tambahan 2 dalam rumus *irtifā'* sesuai dengan pendapat Ḥanafī. Ahmad Ghazali menyatakan bahwa dua penentuan awal waktu salat asar ini benar, namun lebih tepat menggunakan waktu *'aṣr awwal*, sebab pendapat *'aṣr awwal* didukung oleh jumhur ulama dan dalil-dalil yang kuat.

Kata Kunci: *'Aṣr Awwal; 'Aṣr Thānī; Tinggi Matahari*

A. Introduction

Prayer is a form of worship that can interact directly with God, and is obligatory for Muslims, this obligatory prayer is known as the *maktūbah* prayer. In the holy book of the Qur'an, the time for the *maktūbah* prayer has been determined, while a detailed explanation is contained in the Hadith of the Prophet.[1] In the Hadith, the description of the determination of prayer times is explained by using signs of natural phenomena, and applied to the time of the Prophet, so that at that time the determination of prayer was known by looking at natural phenomena directly.

As for after the time of the Prophet, science developed, some astronomers appeared to make various tools such as *istiwā'* sticks'[2] or *hemispherium*[3] and others to be used as a tool for determining prayer times. However, the use of this tool can be used with a direct observation method called the textual method (*ru'yah*). If this determination is used on a daily basis, then there will be a day for Muslims to have difficulty knowing the time of prayer, namely when the weather is not good such as rain or cloudiness, because this weather prevents the object being observed from knowing the sign of the time for prayer.[4]

In addition to the textual method, the determination of prayer times can also be known by the *contextual* method, namely the method using reckoning. This reckoning relates to the provisions of prayer times in the Qur'an and Hadith, which indicate the position of the Sun (high Sun) at a certain place,[5] so that it can make it easier for Muslims to know prayer times, that is enough to look at the clock, without having to make observations every time they want to carry out the *maktūbah* prayer at the beginning of time.

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[1]Muhammad Hadi Bashori, *Pengantar Ilmu Falak: Pedoman Lengkap Tentang Teori dan Praktik Hisab, Arah Kiblat, Waktu Salat, Awal Bulan Qamariah & Gerhana* (Pustaka Al Kautsar, 2015). Hal.145.

[2] Stick Istiwa' is a stick upright that is in the open that is exposed to direct sunlight on a flat plane. Used to determine true North by connecting the end of the stick's shadow when the Sun is in the East and the end of the stick's shadow when it shifts to the West the same distance from the stick. While other uses, it can be used to determine the exact start of the Zuhur prayer time. This stick in ancient times was known as a gnomon *n*. See more on Susiknan Azhari, *Ensiklopedi Hisab Rukyat* (Yogyakarta: Pustaka Pelajar, 2008),105.

[3] Hemispherium is one of the tools used to read the angle of the sundial which has a semicircle shape equipped with a pole. This tool is known since the time of Alexander the Great. Azhari. 76.

[4] Ahmad Izzuddin, *Fiqih Hisab Rukyah* (Penerbit Erlangga, 2007).38.

[5] Izzuddin.39.

Based on the view of jurisprudence, the determination of the early entry of the *'Aṣr* and Isha prayers, there are two differences of opinion between al- Shāfi'ī and Ḥanafī, this is due to differences in phenomena in the legal basis used. As for astronomy, this difference is not an obstacle to knowing the time, because there is one book that explains the early determination of the time for the *maktūbah* prayer in a contextual way based on two schools of thought, namely the book *Anfa' Al-Wasīlah* by Ahmad Ghazali. This book provides a method of determining *irtifā'* at the time of *'Aṣr* and includes the value of *irtifā'* at the time of Isha according to the opinion of the madhhab as *'Aṣr Awwal* for al-Shāfi'ī and *'Aṣr Thānī* for Ḥanafī, *Isha Awal* for al-Shāfi'ī and *Isha Thānī* for Ḥanafī.

In this article, the focus is more on determining the *'Aṣr* prayer from Ahmad Ghazali's thoughts, he adds the number 1 to the *irtifā' 'Aṣr* Beginning formula, and adds the number 2 to the *irtifā' 'Aṣr Thānī* formula. So that it can produce the initial determination of time based on two schools of thought, namely Al-Shāfi'ī and Ḥanafī. However, the time that has been generated from this method is in accordance with the opinions of the two schools of thought based on field observations. The following is a comparison of the time between *'Aṣr Awwal* and *'Aṣr Thānī* with an additional 2 minutes of *iḥtiyāṭ* in Krajan 1 Hamlet, East Kasiyan Village, Puger District, Jember Regency on April 21, 2021.

Based on this fact, it shows that using different *irtifā'* results in different times, between *'Aṣr Awwal* and *'Aṣr Thānī* having a time difference of 0° 56'38". This time difference using the *Anfa' Al-Wasīlah* method, is the length of the shadow twice the initial determination of *'Aṣr Thānī* by observing natural phenomena directly in the field in accordance with the opinion of the Ḥanafī school of thought?

Siti Mufarrohah's paper[6] regarding the "Konsep Awal Waktu Salat Asar Imam Syafi'i dan Hanafi (Uji Akurasi Berdasarkan Ketinggian Bayang-Bayang Matahari di Kabupaten Semarang)" explained that the shadow observation of the *'Aṣr* prayer time using two different heights in Semarang Regency is used as a result to determine the *'Aṣr* prayer time that can be used in Indonesia, namely the *'Aṣr* time according to Al-Shāfi'ī, while the time of the *'Aṣr* prayer according to Ḥanafī's opinion can still be used. in some European countries during

[6] Siti Mufarrohah, "Konsep Awal Waktu Salat Asar Imam Syafi'i dan Hanafi (Uji Akurasi Berdasarkan Ketinggian Bayang-Bayang Matahari di Kabupaten Semarang)" (IAIN Walisongo, 2010).

winter. This is different from Ahmad Ghazali's thinking which explains that the time for the Imam Ḥanafī *'Aṣr* prayer can be used by anyone who is of the Imam Ḥanafī school of thought without taking into account the season and place.

Hidayatullah Hidayat's work[7] regarding "Penentuan Awal Waktu Salat 'Asar Menurut Imam Ḥanafī dan Imam Syafi'i" explains that the beginning of the time for *'Aṣr* prayer according to Ḥanafī and Al-Shāfi'ī can be seen from the legal arguments and *ithbāt* used by each Imām, when viewed from contemporary calculations between the time of *'Aṣr Awwal* and *'Aṣr Thānī*, the duration of the *'Aṣr* prayer is longer than the time for the *'Aṣr Thānī* prayer. In this paper, the formula used in determining the time for the *'Aṣr* prayer is the same as that of Hidayatullah's research, but the focus and locus used are different.

Although the formula used by Siti Mufarrohah and Hidayatullah is the same as this writing, the focus and locus are different, namely the use of field observation methods, precisely in the East Kasiyan village, Jember Regency to prove whether Ḥanafī's opinion with the astronomical formula is appropriate, then compare it with the results of calculations from the right triangle formula. After that, it is necessary to know what Ahmad Ghazali's opinion is about the use of Ḥanafī's *'Aṣr* time for Muslims in Indonesia.

B. Method

The method in this research is included in the type of qualitative field category (field research) with a descriptive approach,[8] so that more focus on the object to be studied. Primary data used by interviewing Ahmad Ghazali and carrying out direct field observations to apply formulas to natural phenomena in Krajan 1 Kasiyan Timur Hamlet, Puger District, Jember Regency. As for the secondary data, it is assisted with data documents that are relevant to writing, namely the Ministry of Religion's Ephemeris book, astronomy books, and other relevant books. The purpose of this paper is to know the time easily, that is, it is enough to look at the clock in determining prayer times based on the schools that are followed.

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[7] Hidayatullah Hidayat, "Penentuan Awal Waktu Salat Asar Menurut Imam Hanafi dan Imam Syafi'i," 2018.

[8] This descriptive purpose is to make a systematic, factual and accurate description of the facts and characteristics of the population of a particular area. See more on M S Suryana, "Metodologi Penelitian, Model Praktis Penelitian Kuantitatif dan Kualitatif," *Jakarta: Universits Pendidikan Indonsia*, 2010., bab 2.

C. Result and Discussion

Prayer time is a time determined based on the apparent circulation of the Sun from a place on earth,[9] the sign to know this time has been described in detail in the Hadith of the Prophet. The sign of the prayer time explained is the time for the *maktūbah* prayer which consists of 5 (five) times, namely the Ẓuhr, 'Aṣr, Maghrīb, Isha and Fajr prayers. The following is an explanation of the timing of prayer based on the Hadith of the Prophet narrated by Al-Tirmīdhī and Aḥmad from Jābir Ibn 'Abdullāh[10]:

ان جبريل اتى النبي صلى الله عليه وسلم يعلمه مواقيت الصلاة فتقدم جبريل ورسول الله صلى الله عليه وسلم خلفه والناس خلف رسول الله صلى الله عليه و سلم فصلى الظهر حين زالت الشمس و اتاه حين كان الظل مثل شخصه فصنع كما صنع فتقدم جبريل ورسول الله عليه وسلم خلفه والناس خلف رسول الله صلى الله عليه وسلم فصلى العصر ثم اتاه حين و جبت الشمس فتقدم جبر يل ورسول الله صلى الله عليه وسلم فصلى المغرب ثم اتاه حين غاب الثفق فتقدم جبريل ورسول الله صلى الله عليه وسلم خلفه والناس خلف رسول الله صلى الله عليه وسلم فصلى العشاء ثم أتاه حين انشق الفجر فتقدم جبريل ورسول الله صلى الله عليه وسلم فصلى الغداة ثم اتاه اليوم الثا ني حين كان ظل الرجل مثل شخصه فصنع مثل ما صنع با لأ مس فصلى الظهر ثم أتاه حين كان ظل الرجل مثل شخصيه فصنع كما صنع بالأمس فصلى العصر ثم اتاه حين وجبت الشمس فصنع كما صنع بالأمس فصلى المغرب فنمنا ثم قمنا ثم نمنا ثم قمنا فأتاه فصنع كما صنع با الأمس فصلى العشاء ثم اتاه حين امتد الفجر و اصبح و النجوم بادية مشتبكة فصنع كما صنع با لأمس فصلى الغداة ثم قال مابين ها تين الصلاتين وقت

"That the angel Gabriel came to the Prophet to teach the times of prayer, then Gabriel came forward while the Messenger of Allah was behind him and the people behind the Prophet, then prayed Ẓuhr when the sun was slipping. Then Gabriel came (again) when the shadow of something was the same as (height), they did as they had done, then Gabriel came forward while the Messenger of Allah was behind him and the people behind the Messenger of Allah, then prayed 'Aṣr. Then Gabriel came (again) when the sun was setting, then Gabriel came forward while the Messenger of Allah was behind him and the people behind the Prophet, then prayed Maghrib. Then Gabriel came (again) when the red cloud had disappeared, then Gabriel came forward while the Messenger of Allah was behind him and the people behind the Prophet, then prayed Isha. Then Gabriel came (again) when dawn rose, then Gabriel came forward while the Messenger of Allah was behind him and the people behind the Messenger of Allah, then prayed the morning (Fajr) prayer. On the next

[9]Zainul Arifin, *Ilmu falak: Cara Menghitung dan Menentukan Arah Kiblat, Rashdul Kiblat, Awal Waktu Shalat, Kalender Penanggalan, Awal Bulan Qomariyah,(Hisab Kontemporer)* (Penerbit Lukita, 2012)., 32.

[10] Muhyiddin Khazin, *Ilmu falak dalam Teori dan Praktik: perhitungan arah kiblat, waktu shalat, awal bulan dan gerhana* (Buana pustaka, 2004).83-84.

> *day, Jibril came (again) when the shadow of the same thing was the same as its (height), then they did as they had done on the previous day, then prayed Ẓuhr. Then Gabriel came (again) when the shadow of something was twice its height, then they did as they had done the day before, then prayed 'Aṣr. Then Gabriel came (again) when the sun was setting, then they did as they had done the day before, then prayed Maghrib. Then we fell asleep and woke up, fell asleep (again) and woke up. Then Jibril came (again) and they did as they had done the day before, then prayed Isha. Then Gabriel came (again) when Dawn broke in the morning the stars were dim, then they did as they had done the previous day, then prayed the morning (Fajr) prayer, then Gabriel said "The time between the two times is the time of prayer."*[11]

Based on the above Hadith, it can be seen that the time limits for prayer are five times. This hadith is used as a reference for determining the beginning and end of prayer times, but in determining the time of *'Aṣr* there are differences in phenomena, causing differences of opinion, not between Al-Shāfi'ī and Ḥanafī, but more precisely between the number of scholars and Ḥanafī. According to the thought of Ahmad Ghazali, this Hadith gives two meanings of time, namely one shadow or what is called *'Aṣr Awwal* and two shadows called *'Aṣr Thānī*. These two terms arise due to Ḥanafī's opinion in determining the end of Ẓuhr, namely when there is one shadow, while Ḥanafī's opinion in determining the end of Ẓuhr is divided into two, namely when there is one shadow and when two shadows, so the second opinion shows that the time between one shadow to two shadows still includes Ẓuhr time.[12]

The determination of the beginning of the time in the *'Aṣr* prayer from the two opinions between *'Aṣr Awwal* and *'Aṣr Thānī* according to Ahmad Ghazali is correct, but it is more appropriate to use the time of *'Aṣr Awwal* because this opinion is supported by the majority of scholars and strong arguments, an example of one of the arguments about the determination of prayer which is in the book *Bulūghul Marām.*[13] Here is a Hadith narrated by Muslim:[14]

> عن عبد الله بن عمرو رضى الله عنهما أن النبي صلى الله عليه وسلم قال: وقت الظهر إذا زالت الشمس وكان ظل كل الرجل كطوله مالم تصفر الشمس ووقت صلاة المغرب مالم يغب الشفق ووقت صلاة العشاء إلى نصف الليل الأوسط ووقت صلاة الصبح من طلوع الفجر مالم تطلع الشمس

[11] Khazin.84-85.

[12] Ahmad Ghazali, "Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan" (Semarang, 2021). on June 9, 2021.

[13] Ghazali. on June 9, 2021.

[14] Muhammad Luqman As Salafi dan Luqman Muhammad, *Syarah Bulughul Maram*. (Surabaya. Kara Utama, 2006). 49.

> *"From 'Abdullāh Ibn 'Umar the Prophet. said: "The time of Ẓuhr is when the sun has tilted (to the west) and the shadow of a person is the same height, before the time of 'Aṣr has come. 'Aṣr time enters as long as the sun has not yet shone yellowish, the time for the Maghrīb prayer before the red clouds disappear, the time for the Isha prayer is until midnight, and the time for the Fajr prayer is from dawn until the sun has not yet risen."*

As for the Hadith that shows the beginning and end of the prayer as follows:

وقد دل على ذلك أيضا ما حدثنا ربيع المؤذن, قال: ثنا أسد, قال: ثنا محمد بن فضيل عن الأعمش, عن أبى هريرة رضى الله عنه قال: قال رسول الله صلى الله عليه وسلم إن للصلاة اولا واخرا, وإن أول وقت الظهر حين تزول الشمس, وإن اخر وقتها, حين يدخل وقت العصر[١٥]

Based on the above Hadith, it shows that prayer has a beginning and an end. The beginning of the time of Ẓuhr when the sun slips and the end of the time of Ẓuhr when it enters the 'Aṣr time, so it can be concluded that the end of the time for the Ẓuhr prayer is the beginning of the time for the 'Aṣr prayer.

According to Ahmad Ghazali, in addition to the Hadith narrated by al-Tirmīdhī, there are Muslim Hadiths that show that there are other arguments that strengthen the opinion of *'Aṣr Awwal*, so Ahmad Ghazali concluded that the determination of the beginning of *'Aṣr* is more appropriate to use the time of *'Aṣr Awwal.* In addition to the two phenomena that have been mentioned in the hadith narrated by al-Tirmīdhī and Aḥmad from Jābir Ibn 'Abdullāh, there is another natural phenomenon written by Uzal Syahruna in his work entitled *Metode As-Syahru*,[16] he writes that there is a day when a shadow occurs at the beginning of the day. Ẓuhr, so that the start of *'Aṣr* occurs when there are two shadows. The two shadows of this object are the determination for a place that occurs when the declination of the Sun and the latitude of the place are 45°, because at that time at the culmination there is the same image as the object.[17]

As for Ahmad Ghazali in responding to this phenomenon, he explained that this opinion belongs to the opinion of Al-Shāfi'ī and the majority of scholars,[18] which states that

[15] Yusuf Abdur Rahman al-Mar'asyi al-Mar'asyi, *Syarh Ma'ani al-Atsar* (Madinah: Alimul Kitab, n.d.).149.

[16] Karis Lusdianto and Maskur Rosyid, "Metode Perhitungan Awal Bulan Kamariah Uzal Syahruna dalam Kitab Tasḥīl al-Mithāl wa al-Aqwāl Li 'Amal al-Hilāl" *Islamika Inside Jurnal Keislaman dan Humaniora 6,No. 1 (2020)*

[17] Moh Syahruna, "Uzal, Ilmu Falak Metode As-Syahru" (Blitar: Gunung Tidas Press, tth, 2019).44.

[18] Ghazali, "Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan." on June 9, 2021.

the beginning of the *'Aṣr* prayer time begins when the image of the object is one time longer than the original object, [19] it means that in this phenomenon at culmination there is one shadow of the object in length, so that the beginning of *'Aṣr* is calculated from the shadow at culmination plus the end of Ẓuhr. Even though in practice it is said that it occurs when the object is doubled, it does not mean that it is based on the opinion of Ḥanafī, but on the opinion of Al-Shāfi'ī.

Ahmad Ghazali categorizes phenomena that have been explained by scholars or madhhabs by positioning the Sun so that it can determine the entry of the *maktubah* prayer time with a contextual method. The following is the high position of the Sun in the book *Anfa' al-Wasīlah*:

Table 1. Sun Altitude on *Anfa' al-Wasīlah* book[20]

Prayer Times	**Sun Altitude**	**Sources**
Ẓuhr	0	-
'Aṣr Awwal	$H = \tan^{-1} (\tan A + 1)^{-1}$	Al-Shāfi'ī School
'Aṣr Thānī	$H = \tan^{-1} (\tan A + 2)^{-1}$	Ḥanafī School
Magrib	-1	-
Isha	-18	Indonesian Scholars
Early Isha	-17	-
Isha *Thānī*	-19	Ḥanafī School
Fajt	-19/-20	Some Scholars
Sunrises	-1	-

Source: *Anfa' al-Wasīlah* book

Based on the table above, it shows that the high value of the Sun from the opinions of several scholars is different, as well as the height of the Sun based on the opinions of two schools of thought, namely Al-Shāfi'ī and Ḥanafī.

C.1 Biography of KH. Ahmad Ghazali and the Book of *Anfa' al-Wasīlah*

Ahmad Ghazali is one of the *falak* experts in Madura who wrote several astronomical books, including the *Anfa' al-Wasīlah* book. He was born in Sampang Madura, East Java on

[19] Arwin Juli Rakhmadi Butar-Butar, *Pengantar Ilmu Falak: Teori, Praktik, dan Fikih* (Jakarta: RajaGrafindo Persada, 2019).34-35.

[20] Ahmad Ghazali, *Anfa'u Al-Wasilah* (Madura: Lajnah Falakiyah Lanbulan, 2013).14-20.

December 12, 1959 AD, he is the son of KH. Muhammad Fathullah pioneered the Al-Mubarok Islamic Boarding School, Lanbulan, Sampang, Madura.[21]

Ahmad Ghazali's intellectual journey since the age of 5 years is learning the Qur'an from his father, and when he entered the age of 9th, he began studying in elementary school (SD) to grade 3 elementary school, this is because the school can initially be reached a distance of 1 KM to 2 KM. Finally, he stopped studying in elementary school and continued his studies at the Madrasah Diniyah school which was raised by his own father.[22] In addition to learning religion from his own father, Ahmad Ghazali once studied with his two older brothers, KH. Kurdi Muhammad and KH. Barizi Muhammad.[23]

Ahmad Ghazali was appointed a teacher at the Al-Mubarok Islamic Boarding School, Lanbulan, Sampang, Madura in 1973M.[24] As for from 1977M to 1980M, every time he entered the month of Ramadan, he took part in khataman book learning including the study of *Fiqh*, Hadith, Sufism and *Tafsīr* to KH. Maimun Zubair Rembang. From 1981M to 1988M deepened his knowledge to Makkah for approximately 15 (fifteen) years, but 7 (seven) years took place in Ma'had as-Shulatiyah.[25] Scholars who gave him knowledge include Shaykh Yāsīn Ibn ‘Isā Al-Fadany, Shaykh Ismā’īl Zayn Al-Yamany, Shaykh Mukhtaruddīn Al-Falimbanī, Sayyid Muḥammad Al-Maliky and others.[26] In the field of organization, Ahmad Ghazali is an adviser to the East Java PWNU LF, a member of the PBNU Falakiyah, a member of the BHR of the Ministry of Religion of the Republic of Indonesia, the deputy chairman of the PCNU Syuriyah in Sampang Regency, and the Head of the Syuriyah of MWC NU, Tambelangan District.[27]

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[21] Ghazali, “Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan.” on June 9, 2021.

[22] Ghazali. on July 8, 2021.

[23] The results of Kitri Sulastri's interview with Mr. Abdul Mu'id Zahid in “Studi Analisis Hisab Awal Bulan Kamariah dalam Kitab Irsyad al-Murid,” Undergraduate Thesis UIN Walisongo Semarang (eprints.walisongo.ac.id, 2015), 54, See more on .Kitri Sulastri, “Studi analisis hisab awal bulan Kamariah dalam kitab Al-Irsyaad Al-Muriid” (IAIN Walisongo, 2011).

[24] Ghazali, “Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan.”on April 24, 2019.

[25] Ghazali.on June 25, 2019.

[26] “Hasil Wawancara Dengan Ahmad Su’udi Fadli Ketua LFNU PCNU Sampang,” on July 10, 2019.

[27] Ghazali, “Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan.”on June 25, 2019.

The various experiences that Ahmad Ghazali had gained made him nicknamed a Mutafannin, namely someone who mastered many scientific fields. It is proven by looking at the works of books published by Ahmad Ghazali at the Al-Mubarok Islamic Boarding School, Lanbulan, Sampang, Madura.[28] The book published by Ahmad Ghazali is not only a book that contains the science of Astronomy, but also a book that contains the science of Hadith, Sufism, *Farā'iḍ*, Morality, and so on.[29]

Before Ahmad Ghazali wrote the book *Anfa' al-Wasīlah*, in 1985, he first studied astronomy to Shaykh Mukhthtar al-Falimbani who came from Palembang with the *rubu' mujayyab* method. At that time, he did not have the desire to study astronomy, but only intended to learn. In 1991M between NU and Muhammadiyah there was a dispute in the determination of the holiday, this caused a desire in the heart of Ahmad Ghazali to focus on studying the science of astronomy. Then he learned the science of Astronomy to KH. Nasir Syuja'i (deceased) from Sampang, KH. Kamil Hayyan (deceased), KH. Hasan B'*Aṣ*ri Said (deceased) from Gresik and Sheikh Zubair Abdul Karim were happy. The method given by these 4 (four) teachers is the taqribi method which is categorized as a classical method. In one year starting from 1993M to 1994M Ahmad Ghazali was able to compile 3 books that discuss astronomy, this book is Taqyidatatul Jaliyah, Faidul Karim and *Anfa' al-Wasīlah* the old version which uses the taqribi method using the Madurese language.[30]

Furthermore, Ahmad Ghazali developed the classical method in the book *Anfa' al-Wasīlah* into the method of *taḥqīqī*, and followed by composing the book *Bughyah al-Rafīq*, at the same time he studied with Muhyiddin Khazin and KH. Nor Ahmad. Apart from studying astronomy, Ahmad Ghazali also studied astronomy with Dr. Odeh, an Arab astronomer from Jordan, owns the Accurat Time program and several teachers from the Middle East.[31]

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[28] Interviewed Purkon with Ismail Fahmi on "Studi Analisis Metode Hisab Arah Kiblat Ahmad Ghazali dalam Kitab Irsyaad al-Muriid," Undergraduate Thesis UIN Walisonngo Semarang (eprints.walisongo.ac.id, 2012), 50, written by Purkon Nur Ramdhan, "Studi Analisis Metode Hisab Arah Kiblat KH. Ahmad Ghozali dalam Kitab Irsyâd Al-Murîd" (IAIN Walisongo, 2012).

[29] "Hasil Wawancara Dengan Ahmad Su'udi Fadli Ketua LFNU PCNU Sampang,". On July 10, 2019.

[30] Ghazali, "Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan." on June 9, 2019.

[31] Ghazali. on June 9, 2019.

C.2. Determination of *'Aṣr* Time in the Book of *Anfa' al-Wasīlah*

The form of the calculation formula used by Ahmad Ghazali in the book *Anfa' al-Wasīlah* is a spherical triangle/spherical trigonometry formula given without going through a decrease, and the earth is considered a sphere.[32] In determining the time of *'Aṣr*, the first step that needs to be known is the data used in reckoning. The data needed are as follows:

a. *Daqā'iq al-Tafāwut* (DT)

Daqā'iq al-Tafāwut is abbreviated as "DT", in the world of astronomy it is known as the Equation of Time, DT is the time difference between the actual (actual) time and the average (middle) time for 24 hours. In astronomy the Equation of Time is marked with e (small form).[33]

b. *Ṭūl al-Balad al-Maṭlūb* (B)

Ṭūl al-Balad al-Maṭlūb is abbreviated as "B", in the world of astronomy it is known as Regional Longitude, B is the distance calculated from the longitude of *Greenwich* as point 0 (zero) to a destination, both east and west. The place east of Greenwich is called East longitude with a maximum value of 180° East, while west of Greenwich is called West longitude with a maximum value of 180° West. In astonomi longitude is marked with the form (lamda).[34]

c. *Arḍ al-Balad* (P)

Arḍ al-Balad is abbreviated as "P", in the world of astronomy it is known as Latitude of Place, P is the distance calculated from the equator as a point 0 (zero) to a destination, both towards North and South. Places to the north of the equator are designated as North latitude with a positive (+) sign with a maximum value of 90° South Latitude at the North Pole, while south of the equator as south latitude is marked negative (-) with a maximum value of -90° South Latitude. at the south pole. In astronomy latitude is indicated by the form (phi).[35]

d. *Mayl Shams* (D)

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[32] Rinto Anugraha, *Mekanika Benda Langit* (Yogyakarta: Lab. Material Physics and Instrumentation Department of Physics FMIPA UGM, 2012).33.

[33] Khazin, *Ilmu falak dalam Teori dan Praktik: Perhitungan Arah Kiblat, Waktu Shalat, Awal Bulan dan Gerhana*.67.

[34] Ahmad Musonnif, "Ilmu Falak Metode Hisab Awal Waktu Shalat, Arah Kiblat, Hisab Urfi dan Hisab Hakiki Awal Bulan," *Yogyakarta: Teras*, 2011.37.

[35] Musonnif.35.

Mayl Shams is abbreviated as "D", in the world of astronomy it is known as the Sun's Declination, D is the distance formed by the path of the Sun calculated from the equator to the Sun. When the sun is north of the equator, the sun's declination is positive (+), while when the sun is south, the sun's declination is negative (-). In astronomy, the Sun's declination is indicated by (delta).[36]

e. *Ṭūl al-Sā'ah al-Dayriyah* (BWD)

Ṭūl al-Sā'ah al-Dayriyah is abbreviated as "BWD", in the world of astronomy it is known as Regional Time Longitude. In Indonesia, there are three regional times, namely GMT+7 for West Indonesia time (WIB) with a regional longitude of 105°, GMT+8 for Central Indonesia time (WITA) with a regional longitude of 120° and GMT+9 for Eastern Indonesia time (WITA). WIT) with a longitude of 135°.[37]

f. *Iḥtiyāṭ*

Iḥtiyāṭ is a time that has a purpose for one's prudence in determining the beginning and end of prayer times, it can be added as at the time of the Ẓuhr, *'Aṣr*, Maghrīb, Isha and Fajr prayers and can also be reduced at the end of the Fajr prayer (rising).[38]

After fullfilling the data needed, the next step is to know the formula to be used. The formula for determining the initial prayer time in Indonesia has various methods, some use a table system as in the *Tibyān al-Mīqāt* book, some use trigonometric formulas as in the *Anfa' al-Wasīlah* book. This writing uses the method of Ahmad Ghazali's thought in the *Anfa' al-Wasīlah* book.

C.3. Analysis of Ahmad Ghazali's Thought on Determining *'Aṣr* Time

The formula contained in this paper is the formula for determining the time for the Ẓuhr, *'Aṣr Awwal* and *'Aṣr Thānī* prayers, because to find out the length of the shadow at the time of *'Aṣr Awwal* and *'Aṣr Thānī* requires shadows when Ẓuhr, as the following formula:

a. Ẓuhr Time

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[36] Khazin, Ilmu Falak dalam Teori dan Praktik: Perhitungan Arah Kiblat, Waktu Shalat, Awal Bulan dan Gerhana.65-67.

[37]Slamet Hambali, "Ilmu Falak 1: Penentuan Awal Waktu Shalat & Arah Kiblat Seluruh Dunia," *Semarang: Program Pascasarjana IAIN Walisongo*, 2011., 101.

[38]Abdul Kadir, *Formula Baru Ilmu Falak: Panduan Lengkap & Praktis: Hisab Arah Kiblat, Waktu-Waktu Shalat & Awal Bulan dan Gerhana* (Amzah, 2012)., 97.

Here are the steps of calculating the noon time:[39]

1) Look for the value of the *Wasṭiyah al-Ḥaqīqiyah* hour or what is known as the Local Mean Time[40]

The way to find out is the Local Mean Time (LMT), namely the value of *al-Sā'ah Istiwā'iyah al-Zawaliyah* or special time (WIS) minus *Daqā'iq al-Tafāwut* or Equation of Time (DT). In this calculation, WIS data uses a value of 12:00:00, while the DT value can be seen in the attachment to the *Anfa' al-Wasīlah* book or in the Ephemeris Hisab *Ru'yah* book of the Ministry of Religion according to the year sought.

Here's the formula to find the value of LMT:

LMT = WIS - DT

2) After knowing the value of the LMT, then look for the value of *al-Sā'ah al-Dā'iriyah* or the target area time (WD).

How to find out *al-Sā'ah al-Dā'iriyah* or regional time (WD), *Wasṭiyah al-Haqīqiyah* value or Local Mean Time (LMT) plus the result of subtraction from *Ṭūl Sā'ah al-Dā'iriyah* or regional time longitude (BWD) with *Ṭūl Balad* or longitude of place (B), then the result is divided by 15.

Here's the formula for finding the time for the Ẓuhr prayer:

WD = LMT + (BWD – B) /15

WD = WIS + ((BWD - B) / 15) –(DT)

or you can use a practical formula, namely by adding the value of *Istiwā'iyah Al-Zawāliyah* WIS (12:00:00) with the result of the value of thul sa'ah dairiyah (BWD) minus *Ṭūl Balad* (B) which is then divided by 15, then in subtract with *Daqā'iq al-Tafāwut* (DT).

[39]Ghazali, *Anfa'u Al-Wasilah.*, 14-15.

[40] *Istiwa'* time is the time based on the actual circulation of the Sun, when the Sun reaches its upper culmination point, which is set at 12:00 LT. See Hambali, "Ilmu Falak 1: Penentuan Awal Waktu Shalat & Arah Kiblat Seluruh Dunia."81.

3) Furthermore, the results of the WD are added with the *iḥtiyāṭ* that has been determined in the *Anfa' al-Wasīlah* book, namely 2 minutes, 3 minutes or 4 minutes. Ahmad Ghazali's goal is to include several different numbers of *iḥtiyāṭ*, to give other people the opportunity to choose one of the *iḥtiyāṭ*s to be used, so that in the use of *iḥtiyāṭ* there is no requirement to use the number 2 (two).[41]

b. *'Aṣr* Time

The timing of *'Aṣr* is divided into 2 (two) terms, namely *'Aṣr Awwal* and *'Aṣr Thānī*. *'Aṣr Awwal* when the shadow of the object is the same as the original object, the opinion according to Al-Shāfi'ī and supported by a number of scholars, while the *'Aṣr Thānī* opinion according to Imam Ḥanafī which states that the time of *'Aṣr* begins when the shadow is 2 (two) times that of the original object. However, when viewed today, according to Ahmad Ghazali, the followers of Ḥanafī mostly use the *'Aṣr Awwal*, but the more afdhol prayer for him is when *'Aṣr Thānī*.[42]

Here are the steps of calculating the time of *'Aṣr Awwal* and *'Aṣr Thānī*:

1) *Irtifā' 'Aṣr*[43]

The way to find the time of *irtifā'* or the height of the Sun (H) is *Arḍ al-Balad* or latitude (P) minus Mail Shams or the declination of the Sun (D), and the result is absolute. The determination of *irtifā'* in the *Anfa' al-Wasīlah* book is divided into two parts, namely *irtifā' 'Aṣr Awwal* and *irtifā' 'Aṣr Thānī*. The following formula is used:

a) *Irtifā' 'Aṣr Awwal*

$$A = [P - D]$$
$$H = \tan^{-1} (\tan A + 1)^{-1}$$

b) *Irtifā' 'Aṣr Thānī*[44]

$$A = [P - D]$$
$$H = \tan^{-1} (\tan A + 2)^{-1}$$

[41]Ghazali, *Anfa'u Al-Wasilah.*, 14.

[42] Ghazali, "Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan." on March 28, 2019.

[43] Ghazali, *Anfa'u Al-Wasilah.*, 15-16.

[44] Ghazali, "Hasil wawancara dengan Ahmad Ghazali Pengasuh Pondok Pesantren al-Mubarok Lanbulan."on March 28, 2019.

2) *'Aṣr* Time[45]

After knowing the result of the height of the Sun or Irtifa '(H), then

a) *Istiwā"* Time:

***'Aṣr* WIS = $\cos^{-1}$ (-tan P x tan D + $(\cos P)^{-1}$ x $(\cos D)^{-1}$ x sin H) /15**

b) "P" is the latitude of the destination, "D" is the declination of the Sun according to the day sought, and "H" is the height of the Sun (*irtifā'*) according to the calculation results above on the day sought. Note, when the Initial *'Aṣr* is sought, it uses the *irtifā'* formula number 1, when the Thānī *'Aṣr* is sought, it uses the *irtifā'* formula number 2. *Local Mean Time* (LMT):

***'Aṣr* LMT = WIS – DT**

i.e. the result of the 'special time' above is reduced by the Equation of Time (DT) according to the day you are looking for.

c) Local Time:

WD = LMT + (BWD – B)/15

namely the result of the Local Mean Time (LMT) above plus the result of subtracting the local time longitude (BWD) with the longitude of the destination, then divided by 15.

3) After the results of the regional time (WD) are found, then it is added to the *iḥtiyāṭ* value of 2 (two) minutes.

Based on the calculation method described above, the author gives an example of one of the three calculations used for field observations in Krajan 1 Hamlet, East Kasiyan Village, Puger District, Jember Regency on April 21, 2021, as follows:

Longitude (P): -8° 19' 41" LS

[45] Ghazali, *Anfa'u Al-Wasilah*., 16.

Latitude (B): 113° 28' 32" BT

Sun Declination (D): 12° 00' 48"

Equation of time (DT): 01' 20"

Ẓuhr Time

LMT = 12 – DT

= 12 – 00° 01' 20"

= 11° 58' 40"

WD = LMT + (BWD - B) / 15

= 11° 558' 40" + (105 - 113° 28' 32") /15

= 11j 24m 45.87d

***'Aṣr* Time**

A = [P – D]

= -8° 19' 41" - 12° 00' 48"

= 20° 20' 29"

'Aṣr Awwal

H_1 = TAN^{-1} $(TAN\ A + 1)^{-1}$

= TAN^{-1} $(TAN\ 20° 20' 29" + 1)^{-1}$

= 36° 6' 43.66"

WIS = COS^{-1} $(-TAN\ P \times TAN\ D + (COS\ P)^{-1} \times (COS\ D)^{-1} \times SIN\ H) /15$

= COS^{-1} $(-TAN$ -8° 19' 41" x TAN 12° 00' 48" + $(COS$ -8° 19' 41")$^{-1}$ x (COS 12° 00' 48")$^{-1}$ x SIN 36° 6' 43.66") /15

= 3° 20' 47.52"

LMT = WIS - DT

= 3° 20' 47.52" - 0° 1' 20"

= 3° 19' 27.52"

WD = LMT + (BWD – B) /15

= 3° 19' 27.52" + (105 - 113° 28' 32") /15

= 2j 45m 33.39d

'Aṣr Thānī

H_2 = TAN^{-1} (TAN A + 1)$^{-1}$

= TAN^{-1} (TAN 20° 20' 29" + 2)$^{-1}$

= 22° 52' 13.91"

WIS = COS^{-1} (-TAN P x TAN D + (COS P)$^{-1}$ x (COS D)$^{-1}$ x SIN H) /15

= COS^{-1} (-TAN -8° 19' 41" x TAN 12° 00' 48" + (COS -8° 19' 41")$^{-1}$ x (COS 12° 00' 48")$^{-1}$ x SIN 22° 52' 13.91") /15

= 4° 17' 26.06"

LMT = WIS - DT

= 4° 17' 26.06" - 0° 1' 20"

= 4° 16' 6.06"

WD = LMT + (BWD – B) /15

= 4° 16' 6.06" + (105 - 113° 28' 32") /15

= 3j 42m 11.92d

Based on the above calculation, if all is added with 2 minutes of *iḥtiyāṭ*, it is known that the time for Ẓuhr is at 11.27 WIB, *'Aṣr Awwal* is at 14.48 WIB, and *'Aṣr Thānī* is at 15.44 WIB. The latitude and longitude data in this reckoning are taken from the Google Earth application, because the coordinate data in Google Earth is accurate to the second order between GPS and the special stick. If you take data in the *Anfa' al-Wasīlah* book, the coordinates are inaccurate, because the latitude and longitude data values in this book are used for the entire Jember Regency, so the difference in the coordinates taken will affect the length of the shadow observed. The data for the declination of the Sun and the Equation of Time are taken from the book Hisab *Ru'yah*, Ministry of Religion 2021.

C.4 Analysis of Observation Time of *'Aṣr Awwal* and *'Aṣr Thānī* in the *Anfa' al-Wasīlah* Book and Triangle Lines Method

Before making field observations, it is necessary to know in advance at what time the object's shadow is twice as long as the object and at what time the object's shadow is twice that

of the object. Observations were made in Krajan 1 Hamlet, East Kasiyan Village, Puger District, Jember Regency, as follows:

Table 3. Noon Prayer Times, *'Aṣr Awwal* and Thānī *'Aṣr*

No	Dates	Ẓuhr	*'Aṣr Awwal*	*'Aṣr Thānī*
1	21-04-2021	11:26:46	14:47:34	15:44:12
2	22-04-2021	11:26:37	14:47:28	15:43:58
3	23-04-2021	11:26:26	14:47:22	15:43:40

Source: Author

Then make observations in the field by giving the shadow points of objects according to the hours listed above, and for the terrain on each side it must be balanced using the help of a spirit level device, here are pictures of field observations on April 23, 2021:

Figures 1: Shadow of Ẓuhr Time

Figures 2: Shadow of *'Aṣr Awwal* Time

Figures 3: Shadow of Thānī's *'Aṣr* Time

The results of measurements of the sun's shadow with a vertical object measuring 10 cm high at the time of Ẓuhr, *'Aṣr Awwal*, and *'Aṣr Thānī* during field observations, produce the following shadow lengths:

Table 4. Shadow Length of Ẓuhr Time, *'Aṣr Awwal* and *'Aṣr Thānī*

No	Date	Ẓuhr	*'Aṣr Awwal*	*'Aṣr Thānī*	Description
1	April 21, 2021	3.7cm	13.7cm	23.7cm	Shadow Length
2	April 22, 2021	3.8cm	13.8cm	23.8cm	Shadow Length
3	April 23, 2021	3.8cm	13.8cm	23.9cm	Shadow Length

Source: Author

Based on the table above, it can be seen that the length of one shadow of a 10 cm object and twice the length of the shadow of a 10 cm object, the results of field observations on April 21, 2021, the initial 'Aṣr length of 13.7 cm, to find out that 13.7 cm is one shadow of the object. size 10cm then 13.7cm minus the length of the object at Ẓuhr 3.7cm equals 10 cm, the results between field observations and reckoning in the *Anfa' al-Wasīlah* book are in accordance with the opinion of Al-Shāfi'ī which shows one shadow of an object.

Based on the table above, it can be seen that the length of one shadow of a 10 cm object and twice the length of the shadow of a 10 cm object, the results of field observations on April 21, 2021, the initial 'Aṣr length of 13.7 cm, to find out that 13.7 cm is one shadow of the object. size 10cm then 13.7cm minus the length of the object at Ẓuhr 3.7cm equals 10 cm, the

results between field observations and reckoning in the *Anfa' al-Wasīlah* book are in accordance with the opinion of Al-Shāfi'ī which shows one shadow of an object.

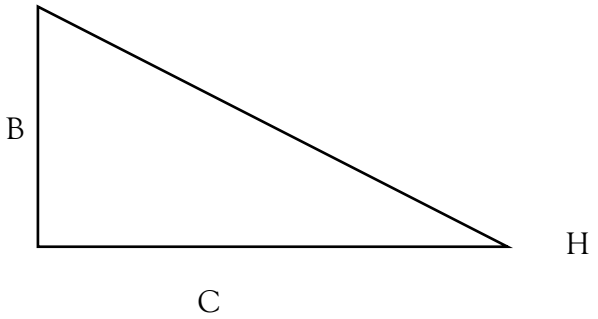
On April 22, 2021 the result of the long shadow of the object between *'Aṣr Awwal* and *'Aṣr Thānī* is the same as what happened on April 21, 2021, which concludes that the field and reckoning are in accordance with the opinions of two Imams, namely Al-Shāfi'ī during *'Aṣr Awwal* and Ḥanafī during *'Aṣr Thānī*. As for on April 23, 2021, the Initial *'Aṣr* between field observation and reckoning was in accordance with Al-Shāfi'ī's opinion, but when *'Aṣr Thānī* between field observation and reckoning did not match or had a difference of 1 cm, this was due to an error in taking shadows due to the reference clock. walk fast.

The method for finding the shadow of an object (C) by using a right triangle line reckoning is as follows:

a. Knowing the value of the height of the object perpendicular (B).
b. Knowing the height of the sun at the time of the *'Aṣr* prayer (H), the method is the same as the formula used above in the book *Anfa' al-Wasīlah*.
c. Calculate using the following right triangle formula [46]:

TAN H = B/C or COT H = C/B

C = B/TAN H C = B COT H



For example, on April 21, 2021, in Krajan 1 Hamlet, East Kasiyan Village, Puger District, Jember Regency. Is known:

Heigh (B): 10cm

'Aṣr Awwal Sun Altitude (H1): 36° 6' 43.66"

'Aṣr Thānī Sun Altitude (H2): 22° 52' 13.91"

Shadow length of *'Aṣr Awwal* time (C1) = B / TAN H

[46]Hambali, "Ilmu Falak 1: Penentuan Awal Waktu Shalat & Arah Kiblat Seluruh Dunia.", 19.

= 10 / TAN 36° 6' 43.66"

= 13.7 cm

The shadow length of *'Aṣr Thānī* (C2) = B / TAN H

= 10/ TAN 22° 52' 13.91"

= 23.7 cm

So, it is found that the length of the shadow during the *'Aṣr Awwal* time is 13.7 cm, and the length of the shadow during the *'Aṣr Thānī* time is 23.7 cm.

The following is the result of calculating the length of the shadow using a right triangle line from April 21, 2021 to April 23, 2021 in Krajan 1 Hamlet, East Kasiyan Village, Puger District, Jember Regency:

Table 5 Sun Altitude and Shadow Length of *'Aṣr Awwal* and *'Aṣr* Thānī

No	Date	Sun Altitude of *'Aṣr Awwal* (H1)	Sun Altitude of *'Aṣr Thānī* (H2)	Shadow Length of *'Aṣr Awwal* (C1)	Shadow Length of *'Aṣr Thānī* (C1)
1	21-04-2021	36° 6' 43.66"	22° 52' 13.91"	13.7 cm	23.7 cm
2	22-04-2021	36° 0' 40.06"	22° 49' 35.69"	13.8 cm	23.8 cm
3	23-04-2021	35° 52' 46.33"	22° 46' 9.28"	13.8 cm	23.8 cm

Source: Author

Based on the comparison of the results between observations from the reckoning of the *Anfa' al-Wasīlah* book and the reckoning of right-angled triangles, the results were the same, except for the observations on April 23, 2021. In determining the height of the Sun, the book of *Anfa' al-Wasīlah* at the time of the *'Aṣr* prayer. The beginning is in accordance with the opinion of Al-Shāfi'ī and *'Aṣr Thānī* according to the opinion of Ḥanafī'.

D. Conclusion

Ahmad Ghazali's thoughts on the difference of opinion between the two Imams in determining the beginning of the *'Aṣr* prayer time with the contextual method, by adding the number one to the *irtifā'* formula for the *'Aṣr Awwal* time, and adding the number two to the *irtifā'* time of 'Aṣr Thānī. The results of the reckoning of the *'Aṣr Awwal* time in the Anfa'u al-Wasliah book with field observations are in accordance with the opinion of Imam Al-Shāfi'ī, and the results of the *'Aṣr Thānī* time calculation in the Anfa'u al-Wasliah book with field

observations are based on the opinion of Imam Ḥanafī, so that in In this case, Muslims are given the convenience in determining the beginning of *'Aṣr* by simply looking at the clock, not only *'Aṣr* according to Imam Al-Shāfi'ī, but Imam Ḥanafī as well. In these two initial determinations of *'Aṣr*, Ahmad Ghazali confirmed both of them as the initial reference for *'Aṣr*, but the more appropriate time of *'Aṣr* is at the time of *'Aṣr Awwal*, because the legal basis used has been agreed upon by many scholars and is supported by strong arguments.

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