

Science and Fiqh in 10th Century AH: Examining Ibn Hajar al-Haytami's Views on *Ru'yah al-Hilāl*

Ahmad Munif¹, David Wildan² and Siti Tatmainul Qulub^{3*}

¹ Walisongo State Islamic University; ahmadmunif@walisongo.ac.id

² Walisongo State Islamic University; davidwildan@walisongo.ac.id

³ UIN Sunan Ampel Surabaya; tatmainulqulub@uinsby.ac.id

* Corresponding author: ahmadmunif@walisongo.ac.id.

ORCID ID: <https://orcid.org/0000-0003-2521-7225>¹

ORCID ID: <https://orcid.org/0000-0001-9720-6213>²

ORCID ID: <https://orcid.org/0000-0002-2294-4737>³

Article History

Received: 2024-10-21

Revised: 2024-11-22

Accepted: 2024-11-24

Published: 2024-12-05

Keywords

Fiqh, Ibn Hajar al-Haytami, Islamic civilization, Istinbat al-hukm, Ru'yah al-hilāl, Science

Citation: Munif, A., Wildan, D., & Qulub, S. T. (2024). Science and Fiqh in 10th Century AH: Examining Ibn Hajar al-Haytami's Views on Ru'yah al-Hilāl. *Ascarya: Journal of Islamic Science, Culture, and Social Studies*, 4(2), 108–117. <https://doi.org/10.53754/iscs.v4i2.710>. Academic Editor: Soleh Hasan Wahid



Copyright: © 2024 by the authors. Published as an open access publication under the terms and conditions of the Creative Commons Attribution (BY NC) license (<https://creativecommons.org/licenses/by-nc/4.0/>).

Ibn Hajar al-Haytami (d. 974 AH/1567 CE) gave his own color and demonstrated the development of *ru'yah al-hilāl* in Islamic civilization. As an important part of determining the beginning of Ramadan for the obligation to fast, Ibn Hajar al-Haytami was of the view that the results of *ru'yah al-hilāl* that utilized tools such as glass could not be accepted or used as guidelines for determining the beginning of the lunar month. This view contradicts the work of science that prioritizes and produces observation aids to maintain precision and reduce human error when observing celestial objects. With a historical and hermeneutic approach, this paper seeks to reveal the historical background of Ibn Hajar al-Haytami's view regarding *ru'yah al-hilāl*. The findings of this paper are that Ibn Hajar al-Haytami's opinion is in line with and influenced by the decline of scientific civilization in Islam in the 10th century AH. At that time, especially in the Ottoman Turkish region, philosophy as the basis for the development of science was rejected and/or ignored in the scientific treasures of Islamic civilization.

DOI: <https://doi.org/10.53754/iscs.v4i2.710>



Public Interest Statement

This study attempts to reveal the relationship between fiqh and science in 10th century AH by focusing on the opinion of Ibn Hajar al-Haytami. This study is important for confirming the sequence of the journey of Islamic civilization from time to time. Some previous studies have not explained how science was not taken into consideration when formulating fiqh opinions in the 10th century AH. A time when science in Islamic civilization experienced decline. Including scientific information that was developing in the Western world, such as the use of lenses for observation aids, was rejected for consideration in fiqh opinions such as *ru'yah al-hilāl*.



Introduction

Fierce debate about the validity and permissibility of exploring and developing philosophy became the face of Islamic civilization after the 5th century AH (Surya, 2020). Imam Ghazali felt that there was confusion in philosophy that endangered religion. He wrote the book *Tahafut al-Falasifah* to express his disagreement with philosophy, which is considered deviant (Lubis and Rozi 2020). Ibn Rushd defended philosophy by spawning the rebuttal *Tahafut Tahafut al-Falasifah* (Mubit, 2016).

The debate between philosophy and religion seems to manifest in the tension between science and fiqh. Science is considered to represent the science of philosophy, and fiqh as a representation of religious science. One manifestation of this can be seen in Ibn Hajar al-Haytami (909-973 AH) regarding the use of visual aids in *ru'yah al-hilāl*. According to al-Haytami, the accepted result of *ru'yah* is *ru'yah* done with the naked eye. The results for *ru'yah* with aid are not accepted (Al-Haytami, n.d.-c).

Al-Haytami lived in the 10th century AH, which is seen as a period of declination in Islamic scientific civilization (Thoyfur, 2021). In that era, the chimney of science slowly moved to the West, while in the world of Islamic civilization, there was no significant development in the field of science (Zahroya & Syarif, 2021), including in the Mamluk and Ottoman Turkish dynasties, where al-Haytami was present. This reality indirectly affected al-Haytami as a leading scholar in the Hijaz region.

On the one hand, Ibn Hajar al-Haytami adheres to the method of *istinbat al-bukm* shafiyah, which in the context of *al-yaqin* testimony requires the eyes to directly see the object in question. Because testimony has been accompanied by additional aid, the results of the testimony change into the category of *zann* (Al-Haytami, n.d.-b). On the other hand, philosophy in the form of science does not question the results of observations using visual aids. In fact, these tools produce more detailed and valid data (Habibah, 2017). However, for certain phenomena, the results of direct eye observation have several shortcomings and weaknesses (Abshor, 2017).

Departing from the contradictions from the perspective of fiqh and philosophical science above, this study seeks to present and reveal the tension between science and fiqh during the 10th century H. Ibn Hajar al-Haytami's opinion was chosen because he represented leading scholars at that time.

Literature Review

From the literature search that has been carried out, there are not many previous studies that reveal Ibn Hajar al-Haytami's opinion regarding the *rejection* of the results of *ru'yah al-hilāl* with the help of equipment. Other studies have examined and elaborated on the debate between fiqh and science in the 10th century AH and the contemporary era, but not specifically on al-Haytami.

The study of al-Haytami and the development of science in Islam in the 10th century H can be seen from the following studies; for example, a journal article written by Desy Kristiane with the title "The Use of Telescopes for Rukyat Al-Hilal: An Analysis of the Opinions of Muhammad Bakhit Al Muṭṭi' and Ibn Hajar Al-Haitami" (Kristiane, 2019). Here, Kristiane only reveals the difference in opinion between Ibn Hajar al-Haytami and al-Mu'thi. It has not been revealed in detail what caused al-Haytami to hold this opinion. The inclusion of things outside al-Haytami influenced this opinion.

Then Siti Lathifatus Sun'iyah wrote with the title "Pemikiran dan Sains Pasca al-Ghazali [Thought and Science After al-Ghazali]" (Sun'iyah, 2017). In this paper Sun'iyah tries to capture the development of philosophy developed by Ibn Rushd, Ibn Taimiyah, and Suhrawardi. However, the pros and cons of philosophy in religious science are not captured in depth.

George Saliba describes a different view regarding the development of science in the Islamic world around the 10th century A.H. According to Saliba, the breath of the development of science in Islam can still be found in the Safawi Sultanate, which leans towards Shi'aism. One of the proofs appears in the existence of the figure of Shams ad-din al-Khafri who criticized Ptolemy's theory. Therefore, Saliba concluded that it is necessary to redefine the periodization of the decline of Islamic knowledge, which considers the 10th century to be the decline of knowledge in Islam (Saliba, 1994).

In line with Saliba, Reza Akbar argues that the development of science can still be found until the 16th century. Akbar refers to the development of astronomy in the Mughal sultanate that existed in what is now India. Some of the names of astronomy experts that can be mentioned there such as Mulla Farid or Mulla Chand and Mulla Mahmud Jaunpuri contributed their opinions in the observation of celestial objects in the era of the Mughal Sultanate (Akbar, 2017).

The study of the relationship between science and religion is presented in the following sections. For example, the writing in the journal article "Membaca Ulang Relasi Sains Dan Agama Dalam Perspektif Nalar Ilmu Falak [Rereading the Relationship between Science and Religion in the Perspective of Falak Science Reason]" was written by Sippah Chotban (Chotban, 2020). This article affirms that the existence of falac science in the modern era is a real form of integration between science and religion. Religious rituals must be completed and accompanied by science to maintain their accuracy and validity.

Similarly, Demila Siti Padilah believes that, in the modern era, the relationship between science and religion (Islam) is still relevant. The results of her study state that much scientific research strengthens the religious norms contained in the holy book. It was also found that religious activities have benefits that can be proven by scientific studies. On some sides, there are aspects of religion that cannot be explained by science (Padilah, 2023).

The close relationship between religion (fiqh) and science is also evident in Muhammad Hasan's article titled "Interaction of Fiqh and Science in the Dynamics of Determining the Beginning of the Hijri Month in Indonesia." Hasan's study shows that science (astronomy) can be applied to parse and translate concepts of fiqh that are applied practically and measurably. On the other hand, fiqh becomes a religious legitimacy for astronomical studies that strengthens their opinions (Hasan, 2023).

In contrast to some of the studies above, this study seeks to reveal more about the historical background of the 10th century when Ibn Hajar al-Haytami lived. Looking further at the existence of the decline of the scientific culture of knowledge in Islamic civilization towards the final choice of Ibn Hajar al-Haytami's opinion, which ruled out tools for *ru'yah al-bilal*. It also explains in more detail why scientific thought declined until the 10th century AH, when Ibn Hajar al-Haytami lived. Although in some Shafiyah circles, in the 13th century AH, the view of using aid for testimony was allowed, the context of the 10th century had its own peculiarities before the era of renewal of Islamic civilization.

Materials and Methods

The research in this paper is classified as descriptive qualitative research with historical, hermeneutic, and Islamic law approaches. Data were obtained using the documentation method, mainly in the main references in the form of Ibn Hajar al-Haytami's works in the field of fiqh, such as *Tuhfat al-Muhtaj* and *Fatāwa al-Kubrā*. Other references provide information about the history of Islamic civilization in the 10th century AH.

The historical approach has been used to reconstruct and describe past events (Surakhmad, 1990). This approach will be used to reveal and understand the background and things that surround the period in which Ibn al-Hajar al-Haytami expressed his opinions. Events, incidents, and things presented at that time. A hermeneutic approach is needed to explore and examine the meaning of Ibn Hajar al-Haytami's opinion contained in his book regarding *ru'yah al-bilal* and observation aids. Here, Gadamer's hermeneutics is used, emphasizing the dialogue and synthesis between the world of the text, the world of the author, and the world of the reader in examining the text (Kau, 2014). The Islamic legal approach is used to see the method and original reference used by Ibn Hajar al-Haytami in expressing his opinion. From these two approaches, conclusions that attempt to answer the purpose of writing are drawn.

Results

Ibn Hajar al-Haytami, whose full name is Ahmad bin Muhammad bin Muhammad bin 'Ali bin Hajar al-Salmunti, al-Haytami, al-Azhari, al-Wāili, as-Sa'di, al-Makki, al-Anṣari, ash-Shafi'i, has a unique history in his naming. The name as-Salmunti refers to the family origin of his grandfather, who came from an area called 'Salmunti' in Egypt (Rasyid, 2014). However, due to the turmoil in the area, his family decided to move to another village in western Egypt (Muhammad, 1998). Al-Haytami refers to the village of Mahallah Abi Haytam in Western Egypt. Ibn Hajar is a tribute to one of his grandfathers, who was famous for his habit of silence, except in emergencies (Al-Haytami, 1998).

Ibn Hajar al-Haytami was born at the end of the Mamluk Dynasty, the current region of Egypt which was the center of power when Ibn Hajar al-Haytami was born. According to Thaḡuss's records, the Mamluk Dynasty ended in the period–1421-1517 AD/824-923 H. In the last two decades, the Mamluk Dynasty was involved in a feud of the rule of another Islamic Dynasty, Ottoman Turkey (Thaḡqus, 2021). According to the information in the book *Jawābir al-Durarr fī Manāqib ibn Hajar*, Ibn Hajar al-Haytami began studying at al-Azhar in 924 AH, one year after the fall of the Mamluk Dynasty (Muhammad, 1998).

Ibn Hajar lost his father as a child. He was raised by his paternal grandfather, who was more than 120 years old. After his grandfather died, al-Haytami was raised by two of his father's teachers, namely Shamsu as-Syinawi and Shamsu Muhammad as-Sarawi Ibn Abi al-Hamaail. At an advanced age, Ibn Hajar al-Haytami suffered from an illness that left him with his education for 20 days (Al-Tarmasiy, 2011). On 21 Rajab 974 AH, al-Haytami wrote a will, and on the morning of 23 Rajab 974 AH, he passed away. Al-Haytami was prayed near the door of the Kaaba and buried in al-Ma'la, near the place of the noble companion, Sayyidina 'Abdullah bin Zubair r.a (Al-Haytami, 1998).

The period of al-Haytami's life that covered two major dynasties, the Mamluk Dynasty and the Ottoman Turkish Dynasty, made him also recognize as a scholar who contributed to the development of the two dynasties. According to the records of *Civilization Fiqh Halaqah* in the old *nu.or.id*, Ibn Hajar al-Haytami was a scholar who contributed

greatly to the development of fiqh in the Mamluk Dynasty era. The book of *Fath al-Mu'in*, which is popular in the Indonesian pesantren world, was written by Sheikh al-Malibary who was a student of al-Haytami (*Kerajaan Islam Yang Berpengaruh Bagi Peradaban NU*, 2022). While Rahmawati & Mohd. Azizuddin Mohd Sani wrote *Perkembangan Peradaban Islam di Kerajaan Turki Usmani* [*The Development of Islamic Civilization in the Ottoman Turkish Empire*], including Ibn Hajar al-Haytami as one of the most famous scholars in the Ottoman Turkish era, along with al-Madabighy, Imam Ramliyy, al-Zibaidiy, Shaykh Hasan al-Kafrawy, and Shaykh Muhammad bin Ahmad bin Arfah al-Dusuqy (Rahmawati & Zani, 2013).

Ibn Hajar al-Haytami also underwent education with leading scholars and intellectuals of his day. He was active in a productive scientific environment, in which ideas and knowledge were freely exchanged. Through his participation in academic debates, Ibn Hajar al-Haytami was able to hone critical thinking and broaden his horizons in various scientific disciplines. Ibn Hajar al-Haytami's teachers have several names. In the field of hadith, he studied Imam az-Zaini Abdul Haqq as Sunbati (d. 931 AH) and Zakaria al-Anshori (d. 926 AH). In the field of fiqh, he learned from many scholars, including Nashir Thoblawi (d. 966 AH) and Abu Hasan al-Bakri (d. 952 AH). Among his teachers were names such as Nashir Al-Laqqoni (d. 958 AH), as-Syinsyauri, Ibn Tohan, Shihab al-Mintawi, Sayyid Hattobi, al-Manahilli, ad-Dalji (d. 948 AH), and Ibn Soigh (d. 932 AH), al-Abbadi, and others (Al-Saifi, 2016).

Ibn Hajar al-Haytami has a view that rejects the use of aids in *ru'yah*, which is the process of observing the hilal or crescent moon to determine the beginning of the month in the Islamic calendar. In his view, the use of aids in *ru'yah al-hilal* is contrary to the principles and values underlying the practice of Islam. al-Haytami considers hilal observation as a task that requires accuracy and precision that can only be achieved through direct observation by the human eye. For him, the use of aids (such as tools made of glass or mirrors) in *ru'yah al-hilal* can lead to doubt and uncertainty in determining the beginning of a month. He argued that the power and ability of human observation should be sufficient to accurately determine the beginning of a month. Furthermore, Ibn Hajar al-Haytami argues that hilal observation is a form of worship and a religious process involving the five human senses, where a person witnesses directly using the naked eye which is often referred to as *ru'yah al-hilal* (Al-Haytami, n.d.-c).

Al-Haytami in *Tuhfat al-Muhtaj* Volume III page 372 explicitly states (Al-Haytami, n.d.-c);

(أو رؤية الهلال) بعد الغروب لا بواسطة نحو امرأة كما هو ظاهر ليلة الثلاثين منه بخلاف ما إذا لم ير وإن أطبق الغيم لخبر البخاري الذي لا يقبل تأويلاً ولا مطعن في سنده

“(or by sighting the new moon) after sunset without an instrument such as a mirror, which is visible on the thirtieth night. It is different if it is not visible owing to cloud cover. This is in accordance with the hadith narrated by al-Bukhari, which does not require interpretation and is not disputed by the chain of transmission.”

al-Haytami also seems to be skeptical of information, observations, or knowledge obtained by involving other devices outside the human body. For al-Haytami, information is classified as *al-yaqin*, when it is obtained directly through human limbs, such as the eyes, nose, ears, and skin (Al-Haytami, n.d.-b). Al-Haytami affirms the same opinion in another book, *Fatāwā al-Kubrā*. According to him, observation by reflection (with a mirror) is feared to not produce the original shape or form of the hilum (Al-Haytami, n.d.-a).

Discussion

Ibn Hajar al-Haytami expressed his opinion on the process of *ru'yah* in the book *Tuhfat al-Muhtaj bi Syarh al-Minhaj*. According to al-Haytami, *ru'yah* performed after sunset on the 29th Shaban should not be performed with aid. al-Haytami explicitly states “... *wa ru'yat al-hilali ba'da al-ghurub la bi wasithah* . . .” (Al-Haytami, n.d.-b). al-Imam Sharwani's opinion explains in his *hasyiyah* that the use of a telescope (*hadid al-başar*) as a tool to see the new moon is not included in one's natural vision. However, the existence of a new moon has not been fully proven by such a tool in general. This shows that adequate knowledge in discovering the existence of the hilum does not necessarily depend on a visual aid such as a telescope. The difference between aid and worship can be seen in the example of Friday prayer, where there is an alternative to the use of aids. In this case, it is not obligatory to accept the correctness of aids, such as telescopes, especially if one's vision is already poor (myopic). This illustrates the difference in approach between an act of worship such as fasting, which is determined by the sacred texts and the *ru'yah* (direct observation) method, without the need to consider the choice of visual aids. In this context, the existence of the hilum in the case of fasting must be proven by sighting it or relying on one's own eyesight, without relying on others or aids (As-Syarwaani, n.d.).

An interesting thing that needs to be examined is when and why did al-Haytami express this opinion? Looking at the explanation in the muqadimah of *Tuhfat al-Muhtāj*, al-Haytami mentions that this book was completed in 12 Muharram 958 AH. *Tuhfat al-Muhtāj* was deliberately written to provide a commentary on the Book of *Minhaj al-Qawim* by Imam Abi Zakariya Yahya an-Nawawi (d. 676 AH) (Al-Haytami, n.d.-b). *Minhaj al-Qawim* itself is a summary of *Mubarrar* written by Imam Rāfi'i (d. 623 AH). *Kitab al-Mubarrar* (Ar-Raafi'i, 2013) was compiled by Imam Rafi'i concurrently with *Kitab Fath al-Aziz* (*ash-Sharh al-Kabir*) (Al-Rafi'i, 1989). *Fath al-'Aziz* itself is a commentary on *al-Wajiz* by Imam Ghazali (d. 505 AH) (Al-Ghazaali, 1997). Imam Ghazali wrote Book *al-Wajiz* as a summary of his book *al-Wasit* (Al-Ghazaali, 1997). Whereas *al-Wasit* is a summary of *al-Basit* (Thabrani, 2009). The Book of *al-Basit* is a summary of the Book of *Nihayat al-Matlab* compiled by Imam Haramayn (Abu Ma'ali al-Juwaini, d. 478 AH) (Al-Juwayni, 2007). *Nihayat al-Matlab* is a commentary on *Mukhtasar al-Muzani* by Imam al-Muzani (d. 264 AH) (Al-Muzaani, 1998). Imam al-Muzani was a student at Imam Shafi'i (Asmani, 2014). Thus, it is clear that *Tuhfat al-Muhtāj* is based on the Shafi'i school of thought.

The book *Tuhfat al-Muhtāj* was completed in 958 AH, meaning that al-Haytami had settled in Makkah al-Mukarramah. This is based on the history in *Manaqib al-Haytami* that al-Haytami began studying at al-Azhar, Cairo in 924 AH, then at the age of 33 years (942 AH) al-Haytami went on hajj to Makkah and returned to Egypt. At the age of 37 (946 AH), al-Haytami went on Hajj again and returned to Egypt. At the age of 40 years (949 AH), al-Haytami went again to Makkah and then settled there until he died in 973 AH (Muhammad, 1998).

It is worth noting that the discussion of *ru'yah al-hilal*, which relates to tools, is a new thing that al-Haytami elaborated and expressed at that time. Contemporaries of al-Haytami such as Sheikh Zakariya al-Anshari (d. 926 AH), Imam ash-Syirbini (d. 977 AH) and Imam Ramliy (d. 1004 AH) and Imam al-Malibariy (d. 987 AH) did not mention tools for the implementation of *ru'yah* in their works. By paying attention to the opinions of al-Haytami's contemporaries who did not mention the use of aids for *ru'yah al-hilal*, indicating al-Haytami provides a new view in fiqh. al-Haytami indirectly responds to the development of other sciences that intersect with the science of fiqh which is his field. Some suspect that al-Haytami was one of the phalacists in his lifetime who was concerned with observation or *ru'yah al-hilal*.

It's just that observation aids that include new inventions, which should help in the process of *ru'yah al-hilal*, by al-Haytami are instead considered to reduce the validity value of the observation results. It seems that al-Haytami tries to adhere to the old provisions that are considered to maintain validity and stability rather than following a sociological legal model that allows opinions or laws to be influenced by the development of (new) realities around him (Mudzhar & Alwustho, 1998).

There is no clear history of where al-Haytami acquired knowledge or information about tools such as mirrors to observe celestial objects. According to historical records, telescopes that were widely used to observe celestial objects were discovered only in the early 17th century AD (Hermawan, 2019), almost half a century after al-Haytami died. The use of mirrors as a visual aid has existed since the 14th century AD, when glasses were discovered. A tool that utilizes Roger Bacon's (13th century AD) findings on lup or magnifying glasses (Deswita & Saputri, 2021). Bacon is strongly suspected of having developed the optical formula discovered by Ibn al-Haitham in the 10th century AD (Jailani, 2018).

In 958 AH, when al-Haytami finished writing *Tuhfat al-Muhtāj*, Makkah, where al-Haytami lived, was under the rule of the Ottoman Turkish Daulah. The territory of *Haramayn* (Makkah and Medina), which was previously under the rule of the Mamluk Daulah centered in Egypt, passed into the hands of the Ottoman Turkish Daulah in 1517 AD/923 AH. Subsequently, the ruler of *Haramayn*, Barakat II Ibn Muhammad, handed over the keys to the Kaaba and declared his submission to Ottoman Turkish ruler at that time, Sultan Selim I (Rohayati, 2015).

As holy places, Makkah and Medina have their own privileges in the eyes of Ottoman Turkish rulers. The Ottoman Turkish ruler dared to declare himself a caliph, the representation of Muslims, after controlling the Hijaz. This appears from the model of delegation of power and sharing of tax revenues, which is different from other Ottoman Turkish domains (Rohayati, 2015).

Another noteworthy aspect of the relationship between al-Haytami, Makkah al-Mukarramah, and Ottoman Turkey is the position of ulama. According to historical records, the ulama occupied a special position on the Ottoman Turks' journey from time to time. Ulama became the main guide for Ottoman rulers to make important decisions (Rizal 2023).

Ulama during the Ottoman Turkish period itself was quite diverse, we can mention for example some terms that intersect with ulama at that time, *qadi*, *qadi 'askar* (military judge), *mudarris*, sultan's advisor, *da'i* of the sultanate,

and *shaikh al-islam* (Ipsirli, 2004). However, as a picture of science and the development of fiqh in the 10th century AH, at this time, the ulama were considered to have no original works. Existing scholars only provide a type of *syarh* or *hasyiyah* to the works of previous scholars (Suar, 2020). Some scholars who hold important positions only read books classified as practical guides for fiqh. On the other hand, some ulama are trapped only in the ritual of community services (Ipsirli, 2004).

This situation has contributed to the stagnation of scientific development. There is an adage that shows the intersection of religion, the sultanate, ulama, and science. "Religion and power rely on knowledge, knowledge relies on scholars, Ottoman Turkish rulers showed more concern for scholars, but scholars could not maximize their benefits." This adage extends to the process of knowledge transfer in madrasas (schools) during the Ottoman period. Conflicts related to the rejection of the branch of philosophy in the form of science were never resolved during this period (Ipsirli 2004). This has resulted in the absence of technological developments based on science.

The role of other scholars during the Ottoman Empire was closely related to that of scholars of Tariqah. Since the beginning of Ottoman Turkey, Tariqah has played a major role in political, social, and religious fields. The Naqsyabandiyah Order, for example, became one of the orders that attracted the attention of Ottoman sultans and officials to become part of it. From the 14th century AD to the 16th century AD, Naqsyabandiyah played an important role in the survival of the Ottoman Turkish sultanate (Rizal, 2023).

By looking at this relationship, it is very likely that al-Haytami, while living in Mecca, received information on the development of observational aids. The important position of Makkah for Ottoman Turkish rulers allowed information from the Ottoman power center in Istanbul to reach the Hijaz region where al-Haytami lived and settled until the end of his life. In addition, the ulama, who became an important factor for the continuity of the Ottoman Empire's journey, increased the chances for al-Haitami to get a variety of information from the Ottoman rulers or astronomical scientists of his time (Ipsirli, 2004).

The clarity can also be seen from the diction used by al-Haitami, "... *ba'da al-gurub la bi wasi'atin nahwa mir'atin...* (Al-Haytami, n.d.-b), where the tool referred to is a mirror. As explained earlier, mirrors have been used as glasses by Europeans since the 14th century. Al-Haytami expressed this opinion in the 15th century. Therefore, it can be strongly suspected that the mirror intended by al-Haytami is related to the use of equipment such as glasses as viewing aids. Military contact between Ottoman Turkey and European powers allowed for the exchange or transfer of information between the two sides (Munzir et al., 2023).

Other information that might have been accepted and strengthened the incompatibility of fiqh and science at the time of al-Haytami relates to information on the development of astronomical equipment and observatories. Although the stretching of the development of science during the Ottoman Turks was not as massive and vigorous as the Islamic sultanate dynasties in the previous golden age, there are still records of the development of science during the Ottoman Turks (Rahmawati & Zani, 2013).

Taqiyudin Muhammad bin Ma'ruf Ash-Shami as-Sa'di (1526-1585), head of astronomy during the time of Caliph Murad III, succeeded in establishing the Taqiyuddin Observatory in 1574, seven years after al-Haytami died. The observatory was completed with the financial support of Caliph Murad III. The Caliph had a big dream that Taqiyuddin's observatory in Istanbul could rival observatories that were developing in the European region. Also to rival Ulugh Begh's observatory in Samarkand (Hassani, 1979). Besides being known as an astronomer, Taqiyudin is known as a jurist. He was a *qadi* or judge in Palestine, Damascus, and Cairo. Taqiyuddin later preferred to pursue astronomy for the rest of his life. Taqiyuddin maintained ties and good relations with scholars and statesmen (Tekeli 2008).

The history of Taqiyuddin's observatory, which was only three years old, on the one hand shows that there was still a stretch of science in the 10th century AH in Ottoman Turkey. On the other hand, it clarifies the unsynchronized or unfavorable relationship between the development of science and fiqh and Islamic law in that era. This reality, although it occurred several years after al-Haytami's death, reinforces al-Haytami 's unwillingness to accept the results of *ru'yah al-hilal* obtained using observation aids.

Perhaps al-Haytami's opinion represents a general picture of the relationship between science and fiqh during the 10th century AH in the Ottoman Turks. There was not much history of scientific development in the 10th century AH in the Ottoman Empire. In contrast to the history of Sulaiman al-Qanuniy's success in compiling the book of laws (*al-qanun*), which earned him the nickname *al-qanuniy*, which is famous (Aini, 2022). It is well known that the success of the Ottoman Turkish military in exploring various regions in the European continent to the Austrian mainland (Munzir et al., 2023) was accompanied by the success of increasing extraordinary state revenues at that time (Rohayati, 2015).

The separation of science from fiqh considerations also seems part of the continuation of al-Haytami's scientific journey. As mentioned at the beginning of the writing in a brief biography, al-Haytami, before settling in Mecca, first lived and studied at al-Azhar in Egypt. al-Azhar at the time of al-Haytami was an educational institution that focused on the study of fiqh and theology. This is different from the initial grand design of al-Azhar during the Fatimid Dynasty, which combined educational design with theology and philosophy (Tambak, 2016). Therefore, although al-Haytami is also known as astronomer, it does not accommodate the existence of observation aids as a practical result of philosophy in the implementation of *ru'yah al-hilal* (fiqh) (Kristiane, 2019).

Based on the description above, al-Haytami's view that does not want to accept *ru'yah al-hilal* with observation aids cannot be separated from the conditions of the development of civilization around al-Haytami which no longer prioritizes science. King said that the 10th century, H, was no longer the golden age of Islam in the development of science (King, 2017). Also explained by Badri Yatim in the historical division of Islamic civilization, the 10th century H or the 15th century AD entered the middle period, which continued the decline phase of Islamic civilization. During this period, traces of military, political, and architectural civilizations were still visible. However, in the field of development and progress in science, this is lacking (Yatim, 2016).

The opinion of al-Haytami in the 10th century AH or 16th century AD was based on Ottoman Turkey, where philosophy and science were not a top priority, in contrast to the development of philosophy and science in the Safawi (Persian) and Mughal (Indian) domains. According to Saliba, in the Safavid domains there was a figure named Shams ad-Din al-Khafri (d. 1525 AD), who developed astronomy (science). More specifically, the results of his observations and studies reached the conclusion of criticizing the opinion of Ptolemy's theory (Saliba, 1994). In the Mughal region, there were still many astronomers in Mulla Farid, Mulla Chand, and Mulla Mahmud Jaunpuri who actively produced astronomical records from their observations (Akbar, 2017).

Ahmad Dallal corroborates the view of the stretching aspects of philosophy and the development of Islamic science in the 16th century AD. Besides mentioning the name al-Khafri who was still active in developing astronomy in that century, Dallal also described other figures who were still active in the world of astronomy. The figure mentioned is al-Tajuri, a scholar of fiqh and astronomer in Egypt. Al-Tajuri used astronomical and mathematical methods to correct the Qibla direction of the mosque in Fes. Therefore, Dallal strongly suspects that the development of science continued in Islamic domains until the 16th century (Dallal, 2010).

al-Haytami's opinion not to accept the results of hilal observations with aids, on the one hand, shows the neglect of science in religious activities. But on the other hand, what needs to be observed is that al-Haytami holds this view in order to strengthen the fiqh argument to continue the method of *ru'yah al-hilal* that has existed and been practiced since the time of the Prophet. Moreover, in fiqh discourse, there is an understanding that observation activities in the hilal issue accompanied by tools classified as *ijtihad* make it no longer worth *al-yaqin*. The issue of *ru'yah al-hilal* has different arguments from the issue of qibla and cosmological theories that were still and continued to be developed until the 16th century.

Conclusion

This research shows that Ibn Hajar al-Haytami's view on the use of aids in *ru'yah al-hilal* is inseparable from the historical context and conditions of Islamic civilization in the 10th century AH (16 CE). This view reflects the tension between science and fiqh at that time, especially under the rule of the Ottoman Turks, who emphasized religious orthodoxy over the development of science and philosophy. Al-Haytami rejected the use of aids such as mirrors in *ru'yah al-hilal* because it was considered incompatible with traditional values in the practice of worship, which prioritized direct observation by the human eye. This view is based on the belief that tools can reduce the validity of observations and change the status of the law from belief (*al-yaqin*) to conjecture (*zann*).

More broadly, this study also reveals that the stagnation of scientific development during al-Haytami's time was closely related to the Ottoman Turks' policy priorities, which were more inclined to strengthen political, military, and religious orthodoxy than to the development of science and philosophy. Although there were figures such as Taqiyyuddin Ash-Shami, who led the astronomical observatory, the dynamics of scientific development in the Ottoman Turkish region were not as strong as in the heyday of the previous Islamic civilization. This is in contrast to the development of philosophy and science in the Safavid Empire in Persia and the Mughal Empire in India during the same period, when astronomy and science still flourished significantly.

This study succeeds in answering the objectives of understanding the background of Ibn Hajar al-Haytami's views regarding *ru'yah al-hilal* with aid, as well as explaining the relationship between fiqh and science in the 10th century AH. Historical, hermeneutic, and Islamic legal approaches provide a comprehensive analytical framework to explore the social, political, and religious contexts that influenced al-Haytami's views. The findings also strengthen the

arguments put forward by David A. King and Badri Yatim regarding the stagnation of scientific development in Islamic civilization in the 15th century AD.

This research is limited to historical analysis and primary texts related to Ibn Hajar al-Haytami and the context of Islamic civilization in the 10th century AH. The main focus is on al-Haytami's views regarding *ru'yah al-hilal* with aid; therefore, it does not further explore the dynamics of the relationship between science and fiqh in other Islamic regions that may have different approaches. In addition, this research does not include field studies or empirical (sociological) analyses of the acceptance of al-Haytami's views among scholars or the public at that time.

Based on the results of this study, further research is needed to explore the development of science and philosophy in other Islamic regions during the same period, especially in the Safavid and Mughal Empires. More in-depth research on the relationship between religion (fiqh) and science in this era is also important to provide a fuller picture of the contribution of both to Islamic civilization. A study on the impact of Ibn Hajar al-Haytami's views on the development of modern astrology can also provide new insights into the relevance of traditional views in the context of contemporary science.

Author Contributions: Ahmad Munif prepared the initial concept of this research article. Data collection and analysis were jointly performed by Ahmad Munif, David Wildan, and Siti Tatmainul Qulub. All the authors have read and agreed to publish this manuscript.

Funding: "This research was funded by BOPTN Universitas Islam Negeri Walisongo (grant number 980/Un.10.0/R/HK.01.14/4/2023).

Declaration of Generative AI: Not applicable, as there was no indication that generative AI and AI-assisted technologies were used in the writing process of this manuscript.

Acknowledgments: -

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Abshor, M. U. (2017). Metode Penentuan Awal Bulan Ramadan, Syawal, dan Zulhijjah menurut Dewan Dakwah Islamiyah Indonesia. *Al-Mazaahib: Jurnal Perbandingan Hukum*, 5(1), 37–52. <https://doi.org/doi.org/10.14421/al-mazaahib.v5i1.1390>
2. Aini, Q. (2022). Sistem Penyusunan dan Penerapan Qanun pada Masa Sultan Sulaiman Al Qanuni dan Pemerintahan Otonomi Aceh. *Tanfidziy: Jurnal Hukum Tata Negara Dan Siyasah*, 1(1), 59–78. <https://doi.org/10.47766/tanfidziy.v1i1.904>
3. Akbar, R. (2017). Sejarah Perkembangan Ilmu Falak dalam Peradaban India dan Keterkaitannya dengan Islam. *Jurnal Ilmiah Islam Futura*, 17(1), 50–72. <https://doi.org/10.22373/jiif.v17i1.1511>
4. Al-Ghazaali, A. H. bin M. (1997). *Al-Wajiz fi Fiqh al-Imaam as-Syaafi'i*. Daar al-Arqaam.
5. Al-Haytami, A. bin M. ibn H. (n.d.-a). *Al-Fataawaa al-Kubraa al-Fiqhiyyah Jilid 1*. Abd Hamid Ahmad Hanafi.
6. Al-Haytami, A. bin M. ibn H. (n.d.-b). *Tuhfatul Muhtaj Bi Syarb Al-Minhaj Jilid I*. Maktabah al-Tijariyah.
7. Al-Haytami, A. bin M. ibn H. (n.d.-c). *Tuhfatul Muhtaj Bi Syarb Al-Minhaj Jilid III*. Maktabah al-Tijariyah.
8. Al-Haytami, A. bin M. ibn H. (1998). *Asyraf Al-Wasail Ila Fahmi Al-Syama'il*. Daar al-Kutub al-Ilmiyyah.
9. Al-Juwayni, A. al-M. (2007). *Nihaayat al-Mathlab fii Diraayat al-Madzhab*. Daar al-Minhaaj.
10. Al-Muzaani, A. I. I. (1998). *Mukhtashar al-Muzani fi Furuu' as-Syaafi'iyah*. Daar al-Kutub al-Ilmiyah.
11. Al-Rafi'i, A. (1989). Fath al-Aziz Sharh al-Wajiz. *Part One of the First Thought*. Najaf: Dar al-Fikr Publications, 8.
12. Al-Saifi, U. (2016). *Nafa'isu Ad-Durir Fi Tarjamati Syaikh Al-Islam Ibnu Hajar*. Dar al-Fateh.
13. Al-Tarmasiy, M. M. bin A. (2011). *Hasyiyah Al-Tarmasiy*. Daar al-Minhaaj.
14. Ar-Raafi'i, A. Q. A. al-K. (2013). *Al-Muharrar fi Fiqh Imam as-Syaafi'iy Jilid 1*. Daar al-Salaam.
15. Asmani, J. M. (2014). Fikih Sosial Kiai Sahal Sebagai Fikih Peradaban. *Al-Ahkam*, 24(1), 31–46. <https://doi.org/10.21580/ahkam.2014.24.1.130>
16. As-Syarwaani, A. al-H. (n.d.). *Hawaasyü Tuhfat al-Muhtaj bi Syarb al-Minhaj Jilid 3* (3rd ed.). al-Maktabatut Tijariyah al-Kubra.
17. Chotban, S. (2020). Membaca Ulang Relasi Sains dan Agama dalam Perspektif Nalar Ilmu Falak. *ELFALAKY: Jurnal Ilmu Falak*, 4(2). <https://doi.org/10.24252/ifk.v4i2.18091>
18. Dallal, A. (2010). *Islam, Science, and the Challenge of History*. Yale University Press.
19. Deswita, P., & Saputri, R. H. (2021). Revolusi Saintifik dalam Perkembangan Ilmu Optika. *Natural Science*,

- 7(2), 138–150. <https://doi.org/10.15548/nsc.v7i2.3028>
20. Habibah, S. (2017). Implikasi Filsafat Ilmu Terhadap Perkembangan Ilmu Pengetahuan dan Teknologi. *Dar El-Ilmi: Jurnal Studi Keagamaan, Pendidikan Dan Humaniora*, 4(1), 166–180. <https://doi.org/10.52166/dar%20el-ilm.v4i1.693>
 21. Hasan, M. (2023). Interaction of Fiqh and Science in the Dynamics of Determining the Beginning of the Hijri Month in Indonesia. *Journal of Islamic Law*, 4(2), 237–257. <https://doi.org/10.24260/jil.v4i2.1433>
 22. Hassani, A. M. (1979). “Taqi al-Din and Arabic Mechanical Engineering, with the Sublime Methods of Spiritual Machines” by Ahmed Y. Rassan. *History of Science*, 17(2), 135–140.
 23. Hermawan, L. (2019). Mengenal Jenis-Jenis Teleskop dan Penggunaannya. *Al-Marshad: Jurnal Astronomi Islam Dan Ilmu-Ilmu Berkaitan*, 5(1). <https://doi.org/10.30596/jam.v5i1.3125>
 24. Ipsirli, M. (2004). The Ottoman Ulema (Scholars). *Foundation for Science, Technology and Civilisation*.
 25. Jailani, I. A. (2018). Kontribusi Ilmuwan Muslim dalam Perkembangan Sains Modern. *Jurnal Theologia*, 29(1), 165–188.
 26. Kau, Sofyan AP. "Hermeneutika Gadamer dan Relevansinya dengan Tafsir." *Farabi* 11.2 (2014): 109-123.
 27. *Kerajaan Islam yang Berpengaruh bagi Peradaban NU*. (2022). <https://www.nu.or.id/nasional/2-kerajaan-islam-yang-berpengaruh-bagi-peradaban-nu-ptD8d>
 28. King, D. A. (2017). The astronomy of the Mamluks. In *New Perspectives on the History of Islamic Science* (pp. 317–342). Routledge.
 29. Kristiane, D. (2019). Penggunaan Teleskop untuk Rukyat al-Hilal: Analisis Pendapat Muhammad Bakhit al-Muṭṭi dengan Ibnu Hajar al-Haitamī. *Bilancia: Jurnal Studi Ilmu Syariah Dan Hukum*, 13(2), 331–354. <https://doi.org/10.24239/blc.v13i2.498>
 30. Lubis, A. A. A. M. R., & Rozi, F. (2020). RETHINKING THE BOOK OF TAHAFUT AL-FALASIFAH: Examining Al-Ghazali's Argumentative Criticism Against the Thinking of Philosophers. *Indonesian Journal of Interdisciplinary Islamic Studies*, 1–18. <https://doi.org/10.20885/ijis.vol4.iss1.art1>
 31. Mubit, R. (2016). Pembelaan Ibnu Rusyd Terhadap Pemikiran Filosof. *MIYAH: Jurnal Studi Islam*, 12(1), 132–150. <https://doi.org/10.33754/miyah.v12i1.35>
 32. Mudzhar, M. A., & Alwustho, M. (1998). Membaca Gelombang Ijtihad: Antara Tradisi dan Liberasi. (*No Title*).
 33. Muhammad, A. bakr ibn. (1998). *Jawaahir ad-Durar fii Manaagib ibn Hajr*. Daar al-Kutub al-Ilmiyyah.
 34. Munzir, M., Artianasari, N., & Ismail, M. (2023). Sejarah Kerajaan Turki Usmani. *CARITA: Jurnal Sejarah Dan Budaya*, 1(2), 159–176.
 35. Padilah, D. S. (2023). Relevansi Agama dalam Era Sains Modern: Sebuah Refleksi Epistemologis. *Gunung Djati Conference Series*, 24, 511–522.
 36. Rahmawati, R., & Zani, M. A. M. (2013). Perkembangan Peradaban Islam di Kerajaan Turki Usmani. *Riblah: Jurnal Sejarah Dan Kebudayaan*, 1(01).
 37. Rasyid, A. (2014). *Tsabatul Imam Syaikhul Islam Ibnu Hajar Al-Haitami Al-Makki As-Syafi'*. Darr al-Fatah Liddirasati wa an-Nasyr.
 38. Rizal, F. (2023). Mengislamkan Turki: Peradaban Tasawuf di Turki-Ottoman Abad ke 13-16. *Khazanah: Jurnal Sejarah Dan Kebudayaan Islam*, 13(1), 17–34. <https://doi.org/10.15548/khazanah.v13i1.953>
 39. Rohayati, T. (2015). Kebijakan Politik Turki Utsmani di Hijaz 1512-1566 M. *Al Turas*, 21(2).
 40. Saliba, G. (1994). A Sixteenth-Century Arabic Critique of Ptolemaic Astronomy: The Work of Shams al-Din al-Khafri. *Journal for the History of Astronomy*, 25(1), 15–38.
 41. Suar, A. (2020). Pemikiran Ekonomi Islam Pada Masa Awal Turki Utsmani. *Al-Dzqabah: Journal of Economic, Management and Business, & Accounting*, 1(1), 53–71.
 42. Sun'iyah, S. L. (2017). Pemikiran dan Sains Pasca al-Ghazali. *Dar El-Ilmi: Jurnal Studi Keagamaan, Pendidikan, Dan Humaniora*, 4(2), 156–172.
 43. Surakhmad, W. (1990). Dasar-Dasar Teknik Penelitian. *Bandung, Tarsito*.
 44. Surya, R. A. (2020). Kedudukan Akal dalam Islam: Perdebatan Antara Mazhab Rasional dan Tradisional Islam. *Ushuluna: Jurnal Ilmu Ushuluddin*, 1(1), 1–21.
 45. Tambak, S. (2016). Eksistensi Pendidikan Islam Al-Azhar: Sejarah Sosial Kelembagaan Al-Azhar dan Pengaruhnya terhadap Kemajuan Pendidikan Islam Era Modernisasi di Mesir. *Jurnal Al-Thariqah*, 1(2), 115–139.

46. Tekeli, S. (2008). Taqī al-Dīn. *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*.
47. Thabrani, A. M. (2009). Akar Sejarah Konstruksi Literal Madzhab Syâfi'. *AL-IHKAM: Jurnal Hukum & Pranata Sosial*, 4(2), 209–228.
48. Thaqqus, M. S. (2021). *Bangkit dan Runtuhnya Dinasti Mamluk* (Vol. 11). Pustaka Al-Kautsar.
49. Thoyfur, M. (2021). Perkembangan Metode dan Instrumen Arah Kiblat Abad Pertengahan: Studi Kajian Historis Perspektif David A King. *AL-AFAQ: Jurnal Ilmu Falak Dan Astronomi*, 3(1), 41–58. <https://doi.org/10.20414/afaq.v3i1.2879>
50. Yatim, B. (2016). *Sejarah Peradaban Islam: Dirasah Islamiyah II*. PT RajaGrafindo Persada.
51. Zahroya, I. U., & Syarif, M. R. (2021). Kodifikasi Historis Ilmu Falak Pada Abad Pertengahan. *ELFALAKY: Jurnal Ilmu Falak*, 5(2), 179–191. <https://doi.org/10.24252/ifk.v5i2.31337>