

***Rashd al-Qiblah* in the *Pesantren* Tradition of Islamic Astronomy: The Contribution of Muhammad Faqih Maskumambang**

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Abstract

This article examines Muhammad Faqih Maskumambang's contribution to the transmission and practice of *Rashd al-Qiblah* within the *pesantren* tradition of Islamic astronomy in *Java*. Using a qualitative approach through historical-textual analysis and intellectual history, this study analyzes the socio-religious context of qibla determination in early twentieth-century *pesantren* communities and the role of *Rashd al-Qiblah* as a practical observational method. The study finds that *Rashd al-Qiblah* in *pesantren* traditions functioned not only as a technique for determining qibla orientation, but also as a medium for religious education, communal participation, and the transmission of practical astronomical knowledge. Unlike many contemporary studies that focus primarily on computational accuracy and digital verification, this article highlights the social and educational dimensions of observational astronomy in Indonesia. The study argues that Muhammad Faqih Maskumambang's contribution reflects the adaptive character of *pesantren*-based Islamic astronomy in mediating between scientific observation, religious authority, and everyday ritual practice in Muslim society.

Keywords: *Rashd al-Qiblah*, qibla direction, Muhammad Faqih Maskumambang, *pesantren* tradition.

Artikel ini mengkaji kontribusi Muhammad Faqih Maskumambang dalam transmisi dan praktik *Rashd al-Qiblah* dalam tradisi astronomi Islam pesantren di Jawa. Penelitian ini menggunakan pendekatan kualitatif melalui analisis historis-tekstual dan sejarah intelektual untuk menelaah konteks sosial-keagamaan penentuan arah kiblat di lingkungan pesantren awal abad ke-20 serta peran *Rashd al-Qiblah* sebagai metode observasi praktis. Hasil penelitian menunjukkan bahwa *Rashd al-Qiblah* dalam tradisi pesantren tidak hanya berfungsi sebagai teknik penentuan arah kiblat, tetapi juga sebagai media pendidikan keagamaan, partisipasi komunal, dan transmisi pengetahuan astronomi praktis. Berbeda dengan banyak penelitian kontemporer yang lebih menekankan akurasi komputasional dan verifikasi digital, artikel ini menyoroti dimensi sosial dan edukatif astronomi observasional dalam Islam Indonesia. Penelitian ini menegaskan bahwa kontribusi Muhammad Faqih Maskumambang mencerminkan karakter adaptif astronomi Islam berbasis pesantren dalam menjembatani observasi ilmiah, otoritas keagamaan, dan praktik ritual masyarakat Muslim.

Kata Kunci: *Rashd al-Qiblah*, arah kiblat, Muhammad Faqih Maskumambang, tradisi pesantren.

A. Introduction

Debates concerning the determination of the qibla in Islam have never been confined to technical questions of astronomical calculation alone. They also involve broader issues related to religious authority, legal legitimacy, and the relationship between Islamic intellectual traditions and scientific knowledge. In the history of Islamic civilization, astronomy developed in close connection with practical religious needs such as determining prayer times, lunar calendars, and the direction of the qibla. David A. King demonstrates that the development of Islamic astronomy was historically rooted in ritual and social needs, particularly in timekeeping and qibla determination.¹ Likewise, Mohammad Ilyas explains that modern qibla determination increasingly integrated astronomical calculations with observational methods to achieve greater precision in Muslim ritual practice.² In the Malay-Indonesian world, discussions on qibla orientation developed alongside the expansion of Islam into regions geographically distant from Mecca, where Muslim scholars were required to reconcile normative legal doctrines with local geographical realities. Recent scholarship demonstrates that qibla debates in the archipelago were closely connected to negotiations between scriptural normativity, scientific reasoning, and social practice. Hidayatullah et al., for example, show that eighteenth-century Jāwī scholars debated whether Muslims outside Mecca were obligated to face the precise structure of the Ka'bah or merely its general direction, reflecting wider tensions between legal orthodoxy and astronomical precision.³ In contemporary Indonesia, discussions on qibla orientation continue to intersect with issues of institutional authority, mosque legitimacy, and social conflict, as illustrated by Nasiri's study on disputes over prayer-row orientation in Surabaya mosques.⁴ These developments indicate that qibla orientation should be understood not merely as a ritual obligation but also as a dynamic arena in which religion, science, and communal religious life continuously interact.

Within the broader tradition of Islamic astronomy (*'ilm al-falak*) in Indonesia, *Rashd al-Qiblah* emerged as one of the most practical and accessible methods for determining qibla orientation. The method relies on observing the shadow of an upright object when the Sun is directly above the Kaaba, allowing ordinary Muslims to verify the qibla through direct observation without depending entirely on complex calculations or advanced astronomical instruments. Existing scholarship on qibla determination, however, has largely focused on technical accuracy, mathematical reformulation, and digital verification. Several studies discuss qibla deviation through spherical trigonometry, geospatial approaches, and astronomical software, while recent research also examines the use of digital applications and computational systems in qibla verification.⁵ Other studies emphasize the role of Islamic reform movements in promoting

¹ David A. King, "Astronomy and Islamic Society: Qibla, Gnomonics and Timekeeping," in *Encyclopedia of the History of Arabic Science*, ed. Roshdi Rashed (London and New York: Routledge, 1996), 1281–184.

² Mohammad Ilyas, *A Modern Guide to Astronomical Calculation of Islamic Calendar, Time and Qibla* (Kuala Lumpur: Berita Publishing, 1984), 93–125.

³ Nur Hidayatullah et al., "Facing the Ka'bah from Java in the Eighteenth Century: 'Abd Al-Ṣamad Al-Fālimbānī's Thought on the Qibla and Mosque Orientation in the Malay Archipelago," *Journal of Islamic Law* 7, no. 1 (February 28, 2026): 222–46, <https://doi.org/10.24260/jil.v7i1.4752>.

⁴ Nasiri Nasiri, "Religious Authority and the Qibla Dispute; A Social Fiqh Analysis of the Mosque Conflict," *International Journal of Islamic Thought and Humanities* 5, no. 1 (March 3, 2026): 61–74, <https://doi.org/10.54298/ijith.v5i1.915>.

⁵ Rahman Helmi and Badrian Badrian, "Evaluation of Rashd Al-Qiblah Method Accuracy: Spherical Plane And Ellipsoid Approaches in Qibla Direction Determination," *Indonesian Journal of Religion and Society* 6, no. 2 (2024): 100–112, <https://doi.org/10.36256/ijrs.v6i2.491>; Mohamaddin Abdul Niri, Nurulhuda Ahmad

scientific approaches to qibla correction, particularly through the intellectual legacy of Ahmad Dahlan and the modernization of Islamic thought in *Java*. Meanwhile, studies by Arwin Juli Rakhmadi Butar-Butar highlight the dynamic interaction between classical Islamic astronomy and local Muslim scholarly traditions in the Malay-Indonesian world, especially within *pesantren* educational environments.⁶ Despite these growing discussions, scholarly attention toward the role of *pesantren* traditions in transmitting and contextualizing practical astronomical knowledge within everyday Muslim religious life remains relatively limited.

This gap becomes particularly visible in the case of Muhammad Faqih Maskumambang, one of the prominent *pesantren* scholars in *Java* who contributed to the development of Islamic astronomy during the early twentieth century. Existing studies concerning Faqih have mostly focused on his religious thought, legal reasoning, and socio-religious activities,⁷ while his contribution to practical astronomy and qibla determination has received far less attention, in fact, his engagement with *Rashd al-Qiblah* demonstrates how *pesantren* scholars actively mediated between classical Islamic astronomy and local religious practice through accessible forms of observational astronomy. His treatise *Raddu al-Ghaflah 'an al-Ijtihād fī al-Qiblah* reflects growing concern among *pesantren* scholars regarding the importance of accurate qibla determination in Muslim society, while also illustrating how practical astronomy functioned within the educational and devotional environment of *pesantren* communities in *Java*. In this context, the *pesantren* tradition did not merely preserve inherited scientific knowledge, but also adapted and contextualized it within local religious life through participatory forms of observation and communal religious practice.

Against this background, this article examines Muhammad Faqih Maskumambang's contribution to the transmission and practice of *Rashd al-Qiblah* within the *pesantren* tradition of Islamic astronomy in Indonesia. Existing studies on qibla orientation have generally followed two dominant trajectories: legal-normative discussions of the validity of ritual orientation and technical studies emphasizing mathematical precision and astronomical calculation. Far less attention has been devoted to understanding how practical astronomical methods such as *Rashd al-Qiblah* were taught, disseminated, and integrated into communal religious life through *pesantren* networks. Methodologically, this study employs historical and textual analysis combined with an intellectual history approach to examine the socio-religious context of *Rashd al-Qiblah* in early twentieth-century *Java*. This article argues that within the *pesantren* tradition, *Rashd al-Qiblah* functioned not only as a practical technique for determining the qibla, but also as a medium for scientific transmission, religious education, and the cultivation of collective awareness concerning ritual

Zaki, and Mohamad Luqman Hakim Mohd Nor, "Analisis Komputasional Aplikasi Sun Compass Dalam Penentuan Arah Kiblat Muslim," *Jurnal Fiqh* 20, no. 1 (June 30, 2023): 1–32, <https://doi.org/10.22452/fiqh.vol20no1.1>; Muhammad Thoyfur, "Digitalization Of Local Rashdul Qibla By Qibla Diagram," *Al-Hilal: Journal of Islamic Astronomy* 3, no. 1 (May 19, 2021): 75–106, <https://doi.org/10.21580/al-hilal.2021.3.1.7697>.

⁶ Arwin Juli Rakhmadi Butar-Butar, *Mengenai Karya-Karya Ilmu Falak Nusantara; Transmisi, Anotasi, Biografi* (Yogyakarta: LKiS, 2017), 15–45.

⁷ Aziz Miftahus Surur et al., "KH. Faqih Maskumambang's Thought Regarding the Prohibition of the Use of Kentongan as a Marker of Prayer Time: A Prophetic Hadith Perspective," *Tribakti: Jurnal Pemikiran Keislaman* 34, no. 2 (July 31, 2023): 153–66, <https://doi.org/10.33367/tribakti.v34i2.3701>; Arifin Arifin, "Brief Treatment of Astronomy: Philological Study of Almanzuma Al-Daliyya Manuscript, Works of Kyai Faqih Maskumambang," *Tambo: Journal of Manuscript and Oral Tradition* 2, no. 2 (2024): 1–12, <https://doi.org/10.55981/tambo.2024.8791>.

accuracy. This perspective resonates with Amin Abdullah's interdisciplinary approach, which emphasizes the importance of integrating religious studies with scientific and socio-cultural perspectives in understanding contemporary Islamic phenomena,⁸ as well as Nidhal Guessoum's argument that the relationship between Islam and science should be understood through constructive engagement between religious tradition and empirical knowledge.⁹ By situating Muhammad Faqih Maskumambang's contribution within the broader history of Islamic astronomy in the Malay-Indonesian world, this study demonstrates that *pesantren* scholars played an important role in mediating between scientific knowledge and everyday religious practice in Indonesian Islam.

B. Method

This study employs a qualitative approach, drawing on historical and socio-intellectual analysis within the framework of Islamic intellectual history. The research examines the contribution of Muhammad Faqih Maskumambang to the development and transmission of *Rashd al-Qiblah* within the *pesantren* tradition of Islamic astronomy in early twentieth-century Java. Rather than approaching *Rashd al-Qiblah* solely as a technical method of qibla determination, this study situates it within the broader socio-religious context of *pesantren* education, communal religious practice, and the transmission of practical astronomical knowledge in Indonesian Islam. The historical approach is used to reconstruct the intellectual and religious environment surrounding the development of *'ilm al-falak* in *pesantren* communities. In contrast, the socio-intellectual approach is employed to analyze how observational astronomy functioned within local religious traditions and communal worship practices. This perspective also enables the study to examine the relationship between scientific observation, religious authority, and ritual practice in the *pesantren* tradition.

This study draws upon various classical and contemporary works on Islamic astronomy, qibla determination, *pesantren* traditions, and the history of Islamic science in the Malay-Indonesian world, including studies on Muhammad Faqih Maskumambang and *Rashd al-Qiblah* in the context of Islamic astronomy. Additional references include scholarly works on practical astronomy, religion and science, and the development of qibla verification in contemporary Muslim society. Data were collected through documentation techniques by identifying, classifying, and examining relevant textual materials related to observational astronomy and *pesantren*-based religious learning. The analysis was conducted through three stages: first, examining the historical development of Islamic astronomy within *pesantren* traditions in Java; second, analyzing the practical implementation of *Rashd al-Qiblah* in communal religious practice and qibla determination; and third, comparing the findings of this study with contemporary discussions on qibla verification, digital astronomy, and the relationship between religion and science in Muslim society. Through this approach, the study seeks to demonstrate that *Rashd al-Qiblah* in the *pesantren* tradition functioned not only as a technical astronomical method, but also as a socially embedded form of religious and scientific practice.

⁸ M. Amin Abdullah, *Multidisiplin, Interdisiplin, Dan Transdisiplin: Metode Studi Agama Dan Studi Islam Di Era Kontemporer* (Yogyakarta: IB Pustaka, 2021), 45–68.

⁹ Nidhal Guessoum, *Islam's Quantum Question: Reconciling Muslim Tradition and Modern Science* (New York: I.B. Tauris, 2011), 7–15.

C. Result and Discussion

1. Muhammad Faqih Maskumambang and the Development of *Pesantren*-Based Islamic Astronomy in Java

The development of Islamic astronomy (*‘ilm al-falak*) in Java cannot be separated from the broader intellectual networks that connected the Malay-Indonesian world with the Ḥaramayn during the seventeenth to nineteenth centuries. Returning Jāwī scholars who studied in Mecca and Medina played an important role in transmitting not only religious sciences such as jurisprudence and theology, but also practical disciplines related to ritual observance, including astronomy, calendrical calculation, and qibla determination. Azyumardi Azra explains that the transmission of Islamic knowledge through these transregional scholarly networks significantly shaped the intellectual formation of *pesantren* communities in the archipelago, particularly in Java and Sumatra.¹⁰ Within this intellectual environment, *pesantren* gradually developed into centers for the dissemination of practical Islamic sciences closely connected to everyday religious life. Zamakhsyari Dhofier similarly notes that *pesantren* traditions emphasized not only textual learning, but also the transmission of applied religious knowledge through teacher-student networks and communal practice.¹¹

Within the *pesantren* tradition, Islamic astronomy occupied a strategic position because it was closely related to ritual obligations such as determining prayer times, the beginning of lunar months, and the direction of the qibla. In many traditional *pesantren* in Java, *‘ilm al-falak* was taught to senior students who had already mastered Arabic grammatical sciences and basic jurisprudence. The discipline was therefore not treated merely as abstract mathematical knowledge, but as a practical religious science required to support the validity of Muslim worship. As noted by Arwin Juli Rakhmadi Butar-Butar, the development of Islamic astronomy in the Malay-Indonesian world was closely connected to the transmission of practical religious sciences within local Muslim scholarly traditions.¹² This tradition also developed alongside broader processes of Islamic reform and scientific adaptation during the late nineteenth and early twentieth centuries, when Muslim scholars increasingly responded to questions of precision, calculation, and scientific authority in religious practice.

The emergence of qibla correction movements in Java during the late nineteenth and early twentieth centuries reflected these broader intellectual transformations. Questions about mosque orientation became increasingly important as Muslim scholars began to reevaluate traditional westward assumptions about the qibla through astronomical calculations and direct observation. Recent scholarship demonstrates that debates over qibla orientation in the Malay-Indonesian world were not simply technical disputes over astronomical accuracy, but also involved legal legitimacy and the negotiation between scriptural normativity and scientific reasoning. Hidayatullah et al., for example, show that eighteenth-century debates among Jāwī scholars concerning the qibla reflected broader efforts to reconcile Islamic legal doctrine with geographical

¹⁰ Azyumardi Azra, *Jaringan Ulama Timur Tengah Dan Kepulauan Nusantara Abad XVII Dan XVIII: Akar Pembaruan Islam Indonesia* (Jakarta: Prenada Media Group, 2018), 320–25.

¹¹ Zamakhsyari Dhofier, *Tradisi Pesantren Studi Pandangan Hidup Kyai Dan Visinya Mengenai Masa Depan Indonesia* (Jakarta: LP3ES, 2011), 79–101.

¹² Arwin Juli Rakhmadi Butar-Butar, *Mengenal Karya-Karya Ilmu Falak Nusantara: Transmisi, Anotasi Dan Biografi*, 2nd ed. (Yogyakarta: Bildung, 2022), 11–15.

realities in regions located far from Mecca.¹³ In this context, Islamic astronomy became increasingly important within *pesantren* traditions because it offered practical methods for improving ritual accuracy while remaining rooted in Islamic scholarly authority.

It was within this intellectual and socio-religious environment that Muhammad Faqih Maskumambang emerged as one of the *pesantren* scholars who contributed to the development of practical Islamic astronomy in *Java*. Raised within the scholarly environment of *Pesantren* Maskumambang in Gresik, East *Java*, he inherited a strong tradition of religious learning while also developing a particular interest in *‘ilm al-falak*. Existing studies indicate that Muhammad Faqih Maskumambang developed within the broader tradition of *pesantren* scholarship in *Java*, particularly through intellectual networks connected to Islamic learning in the Ḥaramayn and Nusantara scholarly circles.¹⁴ Through teaching activities, mosque orientation practices, and the dissemination of observational methods such as *Rashd al-Qiblah*, Muhammad Faqih helped bridge the relationship between scientific observation and everyday religious practice. His contribution illustrates that *pesantren* traditions in *Java* did not merely preserve classical Islamic astronomy but also adapted and contextualized it within local Muslim society through accessible, practice-oriented forms of religious learning.

2. *Rashd al-Qiblah* and Practical Qibla Determination in Muhammad Faqih’s Tradition

Within the tradition of Islamic astronomy, *Rashd al-Qiblah* (*istiwā’ al-a’ẓam*) refers to the observation of the Sun when it is directly above the Kaaba, enabling the qibla direction to be identified from the shadow of a vertical object. In practical terms, this phenomenon enables Muslims in different geographical regions to determine the qibla without relying entirely on complex mathematical calculations or sophisticated astronomical instruments.¹⁵ In the Indonesian context, the method has long been recognized within *pesantren*-based traditions of *‘ilm al-falak*, particularly because it could be practiced collectively by ordinary Muslim communities using simple observational tools such as sticks, strings, and sunlight. The phenomenon generally occurs twice each year, around May 28 and July 16, when the Sun’s declination aligns with the Kaaba’s latitude. At these moments, the shadow cast by an upright object directly indicates the qibla direction with high accuracy.

The practical development of *Rashd al-Qiblah* in Indonesia cannot be separated from the contribution of Muslim scholars who sought to contextualize astronomical knowledge within local religious life. Among the most influential figures in this regard was Muhammad Faqih Maskumambang through his treatise *Raddu al-Ghaflah ‘an al-Ijtihād fī al-Qiblah*. Existing studies indicate that his discussion of *Rashd al-Qiblah* was closely connected to earlier formulations proposed by Ḥabīb ‘Uthmān ibn Yahyā, the Mufti of Batavia, particularly in *Tahrīr Aqwā al-Adillah fī*

¹³ Hidayatullah et al., “Facing the Ka’bah from Java in the Eighteenth Century: ‘Abd Al-Ṣamad Al-Fālimbānī’s Thought on the Qibla and Mosque Orientation in the Malay Archipelago.”

¹⁴ Mada Sanjaya W.S. et al., *Astronomi Arah Kiblat KH Muhammad Faqih Maskumambang Dalam Kitab Biriddi Al-Ghaflati ‘an Al-Ijtihadi Al-Qiblati* (Bandung: Bolabot, 2023), 3–8; Azra, *Jaringan Ulama Timur Tengah Dan Kepulauan Nusantara Abad XVII Dan XVIII: Akar Pembaruan Islam Indonesia*, 166–72.

¹⁵ Susiknan Azhari, *Ensiklopedi Hisab Rukyat*, 3rd ed. (Yogyakarta: Pustaka Pelajar, 2012), 179.

Tahṣīl ‘Ayn al-Qiblah.¹⁶ Nevertheless, Muhammad Faqih did not merely reproduce previous formulations. Rather, he contributed to disseminating and operationalizing *Rashd al-Qiblah* within *pesantren* communities in *Java* through direct observation and practical instruction. His approach reflected the broader tendency among *pesantren* scholars to integrate Islamic jurisprudence, astronomy, and communal religious practice into accessible forms of religious education.¹⁷ In this context, *Rashd al-Qiblah* was understood not only as an astronomical technique but also as a practical instrument for strengthening ritual accuracy among Muslim communities.

To demonstrate the practical application of *Rashd al-Qiblah*, Muhammad Faqih emphasized observational verification through the annual solar transit above the Kaaba. In contemporary astronomical calculations, for example, the *Rashd al-Qiblah* observation on May 28, 2025, occurred at approximately 16:17 (GMT+7) based on the difference between the longitude of Mecca and the Western Indonesian Time zone, combined with the equation of time. At this moment, the shadow of a vertical object accurately indicated the qibla direction. The simplicity of this method constituted one of its principal strengths. Unlike modern digital instruments that may depend on signal stability or magnetic calibration,¹⁸ *Rashd al-Qiblah* relied on direct observation of natural phenomena that could be verified collectively by local communities.

Within *pesantren* communities, *Rashd al-Qiblah* was commonly practiced through direct observation using simple instruments such as sticks and strings. Through such observational practices, *santri* were introduced not only to qibla determination but also to broader astronomical concepts related to solar motion and ritual timekeeping. In this context, *Rashd al-Qiblah* functioned not merely as a technical method of determining the qibla, but also as part of the transmission of practical religious knowledge within *pesantren* traditions. Its continued use among *pesantren* scholars demonstrates how Islamic astronomy in *Java* was taught through participatory observation and communal religious practice rather than through abstract mathematical instruction alone.

3. Observational Astronomy and Communal Religious Practice in *Pesantren* Tradition

One of the distinctive characteristics of *Rashd al-Qiblah* within the *pesantren* tradition lies in its practical and communal nature. Unlike astronomical methods that depend on complicated calculations or specialized instruments, *Rashd al-Qiblah* could be practiced collectively through direct observation of solar shadows at specific moments when the Sun passed above the Kaaba.

¹⁶ Sanjaya W.S. et al., *Astronomi Arah Kiblat KH Muhammad Faqih Maskumambang Dalam Kitab Biriddi Al-Ghaflati ‘an Al-Ijtihadi Al-Qiblati*, 16.

¹⁷ Sanjaya W.S. et al., 66.

¹⁸ Abdul Niri, Ahmad Zaki, and Mohd Nor, “Analisis Komputasional Aplikasi Sun Compass Dalam Penentuan Arah Kiblat Muslim”; Yusuf Nurqolbi DY, Ulil Albab Al aulia Alpaten, and Kurniawan Kurniawan, “Kajian Penentuan Arah Kiblat Dengan Sensor Magnetik Kompas Android,” *Astroislamica: Journal of Islamic Astronomy* 3, no. 2 (December 1, 2024): 193–210, <https://doi.org/10.47766/astroislamica.v3i2.3429>; Akhmad - Husein, Ahmad - Izzuddin, and Muhammad Said Fadhel, “The Effect Of Magnetic Declination Correction On Smartphones Compass Sensors In Determining Qibla Direction,” *Al-Hilal: Journal of Islamic Astronomy* 3, no. 2 (October 31, 2021): 43–74, <https://doi.org/10.21580/al-hilal.2021.3.2.8309>; Nurulhuda Ahmad Zaki and Damia Batrisya Hidayatullah, “Analisis Ketepatan Aplikasi Kiblat Dalam Play Store Dan Apple App Store,” *Jurnal Fiqh* 22, no. 1 (June 30, 2025): 1–35, <https://doi.org/10.22452/fiqh.vol22no1.1>; Muhamad Zainal Mawahib, “Metode Pengukuran Arah Kiblat Dengan Segitiga Siku-Siku Dari Bayangan Bulan” (UIN Walisongo Semarang, 2016).

This practical simplicity made the method particularly accessible for *pesantren* communities and ordinary Muslims. In many cases, qibla verification was carried out in mosque courtyards or open spaces using simple tools such as vertical sticks, ropes, and sunlight. Such practices allowed astronomical observation to become part of everyday religious activity rather than an exclusive scientific exercise reserved for specialists alone. Within this context, practical astronomy functioned not only as technical knowledge but also as a shared religious experience embedded within communal worship and local Islamic learning traditions.

The use of observational methods in *pesantren* communities also reflected a broader educational pattern in traditional Islamic learning. Knowledge was often transmitted through demonstration, repetition, and direct participation rather than through abstract theoretical explanation alone. Zamakhsyari Dhofier explains that *pesantren* educational traditions emphasized close interaction between *kyai* and *santri* through practical and communal forms of learning connected to everyday religious life.¹⁹ In this environment, *Rashd al-Qiblah* became more than a method for identifying prayer direction. It also served as a medium through which *santri* could observe celestial phenomena directly and understand the relationship between astronomy and ritual practice. Through collective observation, concepts such as solar movement, shadow direction, and daily time cycles became part of lived religious experience within *pesantren* society.

The popularity of *Rashd al-Qiblah* among *pesantren* scholars was also closely related to questions of religious legitimacy and ritual accuracy. In the late nineteenth and early twentieth centuries, debates over mosque orientation became increasingly visible across several parts of *Java* as Muslim scholars reconsidered inherited assumptions about westward qibla orientation through astronomical observation and calculation.²⁰ In this context, observational methods offered a practical solution that remained firmly rooted in Islamic scholarly authority while also responding to demands for greater precision in worship. Muhammad Faqih Maskumambang's engagement with *Rashd al-Qiblah* should therefore be understood within broader efforts among *pesantren* scholars to strengthen the accuracy of religious practice without separating scientific observation from the devotional life of Muslim communities.

More importantly, the continued use of *Rashd al-Qiblah* demonstrates how Islamic astronomy in *Java* developed through socially embedded practices rather than through formal scientific institutions alone. Even today, collective qibla observations conducted in *pesantren* and mosques during annual *Rashd al-Qiblah* events continue to attract public participation in many Indonesian Muslim communities. The persistence of these practices reflects the enduring role of *pesantren* traditions in preserving practical forms of Islamic astronomy that remain accessible to ordinary Muslims. In this sense, *Rashd al-Qiblah* represents more than a technical method of qibla determination. It also illustrates how scientific observation, communal worship, and religious education became interconnected within the everyday religious culture of Indonesian Islam.

¹⁹ Dhofier, *Tradisi Pesantren Studi Pandangan Hidup Kyai Dan Visinya Mengenai Masa Depan Indonesia*, 79–87.

²⁰ Hidayatullah et al., "Facing the Ka'bah from Java in the Eighteenth Century: 'Abd Al-Ṣamad Al-Fālimbānī's Thought on the Qibla and Mosque Orientation in the Malay Archipelago."

4. **Rashdul Qiblah, Scientific Literacy, and Contemporary Islamic Practice**

Contemporary studies on qibla determination have increasingly emphasized questions of precision, computational accuracy, and technological development. Recent works by Helmi and Badrian evaluate the accuracy of *Rashd al-Qiblah* using spherical and ellipsoidal approaches,²¹ while studies by Niri, Zaki, and Nor analyze the use of digital applications such as Sun Compass in qibla verification.²² Likewise, Thoyfur discusses the digitalization of local *Rashd al-Qiblah*,²³ Sayehu and Aspandi examine the integration of fiqh considerations with astronomical software, such as Stellarium, to determine qibla orientation.²⁴ These studies demonstrate that contemporary Islamic astronomy has developed in close connection with geospatial science, digital instrumentation, and computational astronomy. In general, however, most recent discussions remain focused on technical verification, mathematical reformulation, and the efficiency of modern instruments in improving qibla accuracy.

Compared with these studies, the present article offers a different perspective by focusing on the social transmission of observational astronomy within *pesantren* traditions. Rather than approaching *Rashd al-Qiblah* primarily as a problem of computational precision, this study demonstrates how observational astronomy functioned within communal religious practice and practical religious education in *Java*. In the *pesantren* tradition represented by Muhammad Faqih Maskumambang, *Rashd al-Qiblah* was not restricted to specialists trained in advanced astronomical calculation. Instead, the method remained accessible to ordinary Muslims through collective observation using simple instruments such as vertical shadows and sunlight. This practical orientation distinguishes *pesantren*-based Islamic astronomy from many contemporary approaches that increasingly rely on digital applications, satellite systems, and specialized astronomical software. The significance of *Rashd al-Qiblah* within *pesantren* communities, therefore, lies not only in its scientific accuracy but also in its ability to connect astronomical observation with communal worship and participatory religious learning.

This finding also broadens previous discussions on the relationship between Islam and science in Indonesian Muslim society. Existing scholarship often frames Islamic astronomy within narratives of modernization, scientific reform, or technological adaptation. While such approaches remain important, the case of Muhammad Faqih Maskumambang demonstrates that the integration between religion and science in Indonesia also developed through local religious traditions and everyday ritual practice. In this context, astronomy was not perceived as a separate scientific domain detached from religious life, but as practical knowledge directly connected to worship, mosque orientation, and communal religious responsibility. The continued use of *Rashd al-Qiblah* in *pesantren* and mosque communities illustrates how empirical observation could function simultaneously as a scientific activity and a devotional practice. This observation resonates with Nidhal Guessoum's argument that the relationship between Islam and science

²¹ Helmi and Badrian Badrian, "Evaluation of Rashd Al-Qiblah Method Accuracy: Spherical Plane And Ellipsoid Approaches in Qibla Direction Determination."

²² Abdul Niri, Ahmad Zaki, and Mohd Nor, "Analisis Komputasional Aplikasi Sun Compass Dalam Penentuan Arah Kiblat Muslim."

²³ Thoyfur, "Digitalization Of Local Rashdul Qibla By Qibla Diagram."

²⁴ Sayehu Sayehu and Aspandi Aspandi, "Fiqh and Astronomical Rashdul Qibla; Determining the Direction of the Qibla by Using a Stellarium," *Al-Marshad: Jurnal Astronomi Islam Dan Ilmu-Ilmu Berkaitan* 9, no. 1 (June 21, 2023): 41–58, <https://doi.org/10.30596/jam.v9i1.14554>.

should not be understood through rigid separation, but through constructive engagement between religious tradition and empirical knowledge.²⁵

From the perspective of the history of Islamic astronomy, the *pesantren* tradition of *Rashd al-Qiblah* also reflects the adaptive continuity of practical Islamic science in the Malay-Indonesian world. David A. King notes that Islamic astronomy historically developed in close relation to practical religious needs such as prayer times, calendrical calculation, and qibla determination.²⁶ The Indonesian experience demonstrates that these practical traditions did not disappear with the emergence of modern technology. Instead, observational methods, such as *Rashd al-Qiblah*, continued to coexist alongside digital instruments and geospatial systems. Institutional guidelines issued by the *Indonesian Ministry of Religious Affairs* and *Jabatan Kemajuan Islam Malaysia* further indicate that observational verification remains an important component of contemporary qibla determination.²⁷ In this regard, the contribution of Muhammad Faqih Maskumambang becomes significant not because he introduced a new astronomical theory, but because he helped preserve and disseminate a practical tradition of observational astronomy that remained socially accessible, religiously meaningful, and scientifically relevant within Indonesian Muslim society.

D. Conclusion

This study demonstrates that *Rashd al-Qiblah* within the *pesantren* tradition of Islamic astronomy functioned not merely as a technical method for determining qibla orientation, but also as a medium for the transmission of practical religious knowledge in Muslim society. Through the contribution of Muhammad Faqih Maskumambang, observational astronomy became integrated into communal religious practice and *pesantren*-based learning traditions in early twentieth-century *Java*. Unlike many contemporary studies that primarily emphasize computational precision, digital applications, and geospatial verification, this article highlights the social, educational, and participatory dimensions of *Rashd al-Qiblah*. The findings indicate that *pesantren* traditions played an important role in mediating between scientific observation and devotional practice through accessible forms of observational astronomy rooted in communal religious life. In this respect, the study contributes to broader discussions concerning the relationship between Islam and science, particularly in the context of locally embedded scientific traditions in Indonesian Islam.

Nevertheless, this study remains limited by its primary focus on historical and textual analysis within a specific *pesantren* context in *Java*. The article does not yet provide extensive comparative analysis with other regional traditions of Islamic astronomy in the Malay-Indonesian world, nor does it examine contemporary field practices of *Rashd al-Qiblah* in *pesantren* communities through ethnographic observation. Future research may therefore explore comparative studies of qibla practices across different *pesantren* networks, investigate the transformation of observational astronomy in the digital era, or examine how contemporary Muslim communities negotiate between traditional observational methods and modern

²⁵ Guessoum, *Islam's Quantum Question: Reconciling Muslim Tradition and Modern Science*, 7–15.

²⁶ King, "Astronomy and Islamic Society: Qibla, Gnomonics and Timekeeping," 1–15.

²⁷ Kementerian Agama RI, *Pedoman Penentuan Arah Kiblat* (Jakarta: Direktorat Pembinaan Badan Peradilan Agama Islam, 2012), 55–71; Jabatan Kemajuan Islam Malaysia, *Kaedah Panduan Falak Syarie* (Kuala Lumpur: Percetakan Nasional Malaysia Berhad, 2001), 85–101.

technological systems in qibla determination. Such studies would further enrich the understanding of Islamic astronomy as both a scientific and socio-religious practice within Southeast Asian Islam.

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